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[OFFICIAL NOTICE.]

Where to Find the Western Gas Association's Exhibit, and the Custodian Thereof, at the World's Fair.

To the Fraternity: The exhibit of the Western Gas Association, at the World's Fair, St. Louis, is located in Section 33A, Liberal Arts Building, where Mr. Fred. R. Persons, who is in charge of the same, will always be on hand to receive visitors and to explain anything that requires explaining.

[NOTICE.]

Congress of American Gas Associations.

SECRETARY'S OFFICE,
58 WILLIAM ST, N. Y. CITY,
May 4, 1904.

The following Associations have agreed to participate in the Congress of American Gas Associations, to be held in St. Louis, June 15th and 16th: American Gas Light Association, New England Association of Gas Engineers, Western Gas Association, Pacific Coast Gas Association, Ohio Gas Light Association, Southwestern Gas, Electric and Railway Association, Michigan Gas Association, Wisconsin Gas Association, Kansas Gas, Water and Electric Light Association, Society of Gas Lighting, Guild of Gas Managers. The concurrence of all these Associations insures a successful Congress.

A. E. FORSTALL,
Sec'y.

[OFFICIAL NOTICE.]

Twenty-Seventh Annual Meeting, Western Gas Association.

OFFICE OF SECRETARY,
NEW ALBANY, IND., April 25th, 1904.

The Twenty-seventh Annual Meeting of the Western Gas Association, in connection with the Gas Congress of all American Gas Associations, will be held at the Gas Exhibit Department of the Louisiana Purchase Exposition, St. Louis, Mo., June 14 to 18, 1904.

The sessions of the Western Association will be held June 14th, and will be called to order by the President, Mr. F. H. Shelton, at 10 A.M.

The Gas Congress of all American Associations will be held at the same place, Wednesday and Thursday, June 15–16; Mr. Rollin Norris, President of the American Gas Light Association, presiding at the opening session.

The various passenger associations have refused to grant the usual rates on the certificate plan, for the reason that all railroads have agreed to furnish rates to persons attending the St. Louis Exposition at a less rate than obtainable heretofore by the certificate plan.

A consultation with the passenger agents in the various localities will secure rates to St. Louis, with the privilege and restrictions imposed by the different rates obtainable.

The Hotel Jefferson will be the Association's headquarters, and Mr. E. G. Cowdery, Chairman of the Committee on Arrangements, announces that "The Committee will be represented at all times, in this location, by efficient help to be of assistance to delegates in any way they can."

The Committee of Arrangements announce rates at the various Hotels as follows:

Hotel Jefferson: $7 to $12 per day for room; privilege given for two persons to occupy a room.

Planters' Hotel: $3 per day per person; European plan. The hotel will place four persons to a room.

St. Nicholas Hotel: $7 per day and upward per room; European plan. Two persons privileged to occupy a room.

St. James Hotel: $7 per day per room, with privilege of two to four persons to each room.

The "Inside Inn," located upon the Fair Grounds, offers the following rates:

European Plan Includes Lodging and Daily Admissions.	Number of Rooms.	American Plan Includes Lodging and Daily Admissions.
$1.50 a day.....	500	..... $3.00 a day.
2.00 "	500	..... 3.50 "
2.50 "	500	..... 4.00 "
3.50 to 5.50 a day....	500 with bath	....$5.00 to 7.00 "

Children under 10, half rate.

Single meals: Breakfast, 50 cents; luncheon, 50 cents; evening dinner, 75 cents. A la carte service at moderate prices.

Persons desiring to join the Association will have application blanks mailed to them upon application to the Secretary.

JAMES W. DUNBAR, Sec'y.

BRIEFLY TOLD.

THE WESTERN'S INVITATION TO ATTEND ITS TWENTY-SEVENTH MEETING.—We are indebted to President Shelton for a copy of the invitation to attend the twenty-seventh annual meeting of the Western Gas Association, which, as every gas man knows, will be held in St. Louis, June 14th next. The invitation, which is a general one to the fraternity, means that everything is open to the visitor—from the Association's technical exhibit in the Fair proper to the meeting room during time of

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the convention. President Shelton informs us that any members of the Western Association who would like to send such an invitation in their own name, and especially to particular friends either here or abroad, can procure from him, on request, extra cards of invitation for such individual mailing.

NOTES—

MR. PERSONS informs us that anyone sending goods for the Western Gas Association's exhibit after this date must send by express, prepaying the charges. The management will not now allow exhibitors to receive bulky freight in the daytime. Mr. Persons will be on hand to give any information needed regarding space or displays.

"H. G.," writing from Chicago, under date of the 4th inst., says: "On the evening of the 2d inst., the employees of the Peoples Gas Light and Coke Company, Division street Station, Chicago, ceased work and called for Supt. Bradley. When word to that effect was conveyed to Supt. Bradley, whose men had always been loyal to him, he hastened to the cupola house. Here over 100 serious faces met his anxious look, and the situation was only explained, when Foreman Carswell said to Mr. Bradley, in behalf of the men, that in appreciation of the personal interest he had taken in their welfare and betterment, they desired to present him with a little token. Foreman Fitzgerald here brought to view a solid gold watch and a meerschaum pipe. It is easy to understand Mr. Bradley's bewilderment, but he quickly regained self-possession and addressed the men in the kindly manner that always characterizes his course and that has won for him their highest regard. There is no more popular 'Super.' than Charles W. Bradley."

IT might be just as well at the present time not to say much about the forwardness of the finishing touches at the World's Fair. In 10 days or so everything will be in good working order. Meanwhile it is worthy of note that the Lighthouse was completed and ready for duty when the curtains were pulled back.

The Gas Congress in Its Relation to the Gas Fraternity and the Gas Industry.

By MR. C. J. R. HUMPHREYS.

In considering the Congress of the Gas Associations of America, which is to be held at St. Louis next month, the writer finds his thoughs running along nominally in two channels—channels so closely allied as to blend and flow on almost as one thought, and yet each having some distinctive features which afford an excuse for the dual line of thought. I say the treatment of the subject in the double way as indicated by the headlines is more fanciful than real, or nearly so, because I hold the relation of the gas fraternity to the gas industry is so closely linked, is so binding, as almost to preclude separating the two into the two lines of thought. It is useless to cavil at this statement. It is worse than useless to deny the assertion that anything which affects adversely the members of the gas fraternity does not in like manner have its injurious bearing on the gas industry, and it would be equally futile to maintain a contention that everything which tends to increase the knowledge and training and experience of the gas fraternity does not redound to the expansion and greater stability of the gas industry.

There may be some members of the fraternity who think differently, who feel that they have no responsibility for the advancement of the gas industry, who see nothing more in the vocation than the means of earning a livelihood; but I doubt it, or if such there be, they form but an infinitesimal figure among the confreres. There may be among the gas capitaltsts some (I fear, unfortunately, there are many) who do not feel that the advancement, the expansion, the utility of the gas industry in this day and generation are dependent on the ability, the wisdom, the experience of the educated gas manager, but the number of such syndicate-capitalists is on the wane, and the trend of affairs is clearly in the direction of a more thorough appreciation of the dependence of the gas industry on the thoroughly equipped gas manager. It is idle to controvert these thoughts.

Nevertheless, as I stated at the outset, there are certain aspects of my chosen headlines which justify the two lines of thought in what I wish to indulge:

1. The relation of the Gas Congress to the gas fraternity. And right here, and having in mind my remarks anent the gas industry being dependent on the gas fraternity, the suggestion is pertinent that it is essential that

The gas man, whether he be manager, engineer, or superintendent, keeps thoroughly abreast of the times.

Can this essential feature of the problem be fulfilled if a gas man is merely a member of and an attendant at the local gas Association of?

I am not in the least degree belittling the local societies in answering the question in the negative. The local Associations have a certain definite work of great importance. The members of such bodies come together on grounds of closest friendship, with the feeling that many everyday problems can be discussed among the members with perfect freedom in the spirit of friendship which begets confidence and leads to a closer interchange of views on many matters of importance, which might not be discussed before the whole gas world, but is it a mistake to so value these benefits as to lead a gas man to hold that it is not necessary for him to go farther afield in his desire to be thoroughly abreast of the times; for many of these problems must in such instances be discussed in their setting of local color. Is it not essentially wrong that the gas capitalist should feel that he has done his full duty when he has assented to the gas man, be he manager, engineer or superintendent, attending these local gatherings, and stop at that? He certainly has fallen far short of the broad view he should have of the dependence of the expansion of the gas industry upon the gas man. That these views have had extensive recognition on the part of the gas men is amply shown in the growth of the larger Associations like the American and the Western. Here the advantage of more extended intercourse with other gas men has clearly shown itself, and at these meetings of the American Association the members from the Eastern States, and a goodly number from other sections of the country, have clearly been benefited by thus coming in contact with the experience, knowledge and methods of their confreres scattered over a larger territory, having varied problems to work out, or perhaps the same old task, but each surrounded by its own particular and peculiar local coloring, and by thus giving and taking from facts and experience each participant has been benefited in this broader field.

And if our thoughts run to the Western Association gathering its main support from the territory indicated by its name, and having withal a goodly representation from the East, the same line of thought is ours; but here the broadening effects of our Associations stop. Our country is too large or, rather, in the opinion of the majority, it is too large to have a national Association with its yearly meetings which would draw its membership from all sections of the country, embracing the membership of all the local and larger bodies. It is right here that the Gas Congress steps in and offers us better things, holding out an invitation to the gas men from the North, East, South and West to join in a general discussion of the numerous pressing problems of the day, each Association and each gas man contributing to the common storehouse of knowledge, experience and methods, and each in turn drawing therefrom information touching problems and difficulties foreign to his experience; or viewing with a local coloring to him unknown many of those problems which have been so familiar to him but are thus made to appear in a different light when presented by men living many miles apart and pursuing their business under such varied conditions.

This is the line of thought which I would present to the gas men of the country when urging a full attendance at the Congress, yet none realizes more fully than I do the impotence of words when discussing such a theme unless the reader could be brought to a realization of the fact that in a country so large as ours the people of different sections pursue any line of business in such diverse ways that the methods of one portion seem well-nigh foreign to those of another distant part; and if this thought could be brought home to the individual gas man the true significance of the remark previously made, that the Congress must bring together the knowledge and experience of all parts of our country and make it all common knowledge, common experience would be appreciated. The Congress is not expected to be an international affair, but it is meant to be (and here I wish we might coin a word to express its true purpose—the bringing together of gas men from all parts of our country—a word like in character to "international," and yet embracing only the different sections of our own country), but it is meant to be a bringing together of the gas men of America. And the fact that we are forced to fall back upon the word "Congress" to express the meaning of the meeting goes a long way in meeting the criticism of some gas men that the Congress will be only a Gas Association meeting. As the word "Congress" is greater than the term "Association meeting," so must the Congress be greater than any Association, opening up a broader, wider field for the education and edification of the gas man, and offering advantages so great and potent as to draw to its meeting, aye, and to make participants in its gathering, all progressive gas men who would keep up with the times in this progressive age, whose methods are ever changing, yet holding unalterable to one thought, that the man who succeeds must be in closest touch with the changing conditions.

In another article I hope to treat of the relation of the Gas Congress to the gas industry.

[REVISED BY THE SECRETARY.—Continued from page 691.]

TWENTIETH ANNUAL MEETING, OHIO GAS LIGHT ASSOCIATION.

HELD IN THE HOLLENDEN HOTEL, CLEVELAND, O., MARCH 16, 17 AND 18, 1904.

SECOND DAY—MARCH 17.—MORNING SESSION.

Discussion on the paper[1] by Mr. W. A. Baehr on "The Construction and Operation of Recuperative Benches.—No. 2."

The President—This certainly is a most valuable presentation of the subject by a very able man. The paper which Mr. Baehr presented to the Ohio Association last year attracted a very great deal of attention and most favorable comment, even from foreign publications, gas journals abroad quoting it freely and commenting very favorably upon it. I have no doubt the paper just read will receive as favorable comment as did Mr. Baehr's former paper. We would now be glad to have a discussion upon it. Mr. Dewey, have you anything to say on the subject?

Mr. Dewey—The matter was first brought to my attention by a conversation I had with Mr. Baehr; or, rather, his attitude on the subject was brought to my attention in that way. I had taken up the question at Detroit and had given it considerable thought and study. I am firmly of the belief that gas men, and particularly gas engineers, ought to pay more attention to the subject. I think we have fallen behind and have not made the progress and research along this line that we have in some other lines of the gas business. The subject was brought very forcibly to me in the same way as has been suggested by Mr. Baehr, and that is, with reference to the flue linings of our water gas generators. We are at the present time making some analyses and tests of firebrick and fireclay material, getting our samples from almost all the manufacturers, and while I cannot yet give any definite results I believe from these experiments we shall soon be able to at least determine in our own mind from whom, and what kind of materials, we shall order in the future. Another matter not brought out in the paper, although I believe it is important, is the fact that certain qualities of fireclay material are necessary for certain uses. For instance, the firebrick material that may be suitable for the lining of a water gas generator might not be suitable for the lining of a carburetter or for bench construction. In other words, it is barely possible that we should study the subject from a chemical standpoint. There are certain substances or ash which, combined with the carburetted material, cause fluxing or fusing at a very much lower temperature than firebrick would naturally fuse under different conditions, and the consequence is a destruction of the lining of our generators due to that very trouble, the ash combining with the fireclay, or the iron possibly in the firebrick material lowering the fusing point and consequently resulting in the rapid deterioration of tho brick. As I say, I am not ready to take any positive stand on this subject. I am only seeking information.

The President—Mr. Doherty, have you anything to say on the subject?

Mr. Doherty—I have never given close consideration, Mr. President, to the character of materials used for construction. In planning the work for the research department of this Association I have made out specifications for testing the material, but they are still in a crude form which will involve a determination of the expansion co-efficient of the effect of gases at high velocity, the tensile strength of the material and the compressing strength, the idea being to outline specifications and then try and induce somebody to take up the subject of the study for the research department and see what they could give us of value. That is as far as I have gone on the problem of the character of material for construction. I would prefer to call this contribution of Mr. Baehr a report rather than a paper, because the original intention was to have someone working on bench construction and operation all the time, reporting progress thereon at each meeting of the Association, and really it would, therefore, be a progress report each year. My attention has been more directed towards the operation of benches, and perhaps the most important benefit to be derived by gas companies is to go into the question of operation thoroughly and try to bring the more poorly constructed benches up to the standard of the best, and the more poorly operated benches up to the benches which are operated in the best mode. The operation feature is one that would bring the most important results to the gas companies. In the question of construction a great deal depends upon the material and upon its heat conductivity. As you perhaps know, they have made some extended experiments in Germany on different qualities of material for coke oven processes. They are now using silica block in one plant, which is a material that cuts down the time required for carbonization. With most of the coke oven plants the heat is taken up by the regenerators and is given off again and the conductivity is not so important perhaps in a coke oven of the regenerative system of working as in gas works where we use recuperative benches, where we pass our heat from one flue to another through a wall of firebrick. Firebrick is a poor heat conductor. If it can be made a good heat conductor, and at the same time retain its heat resisting properties, or have its heat resisting properties increased, we can materially improve the operation of benches and also cheapen their construction. We have been working for several years on this subject and I am trying to think now if there is anything that I can announce which will be of value in the operation of benches as a result of our research that was not covered in my report to the Western Association two years ago, or in Mr. Baehr's report to the Ohio Association last year. I don't believe there is anything now that I can say, but I think a reiteration of the necessity for keeping the fuel bed of uniform depth, or perhaps it would be more proper to say, of uniform resistance, so that one portion of the fuel bed will not be doing more work than it should, or more than its proportion of work, is an important consideration to be kept in mind. The importance of using no more water than is necessary to prevent clinkering, and the necessity for regulating the supply of air after analyses have been made of the flue gases, are also important. Another point which may or may not have been covered by Mr. Baehr's paper—I know I spoke to him about it at the time—was the necessity of operating the stack dampers so that the least differential pressure will exist between the waste gas flues and the incoming air flues. The effects of the inlet dampers on the primary and secondary air are readily understood. It is generally assumed by the operator that an opening of, say, 1 inch will give a certain amount of air, and that an opening of 1¼ inch will give 25 per cent. more air. Now, the relation between the opening in that damper and the amount of air passing through the flue is not necessarily uniform at all. The resistance of the flue may so far exceed the resistance of the damper that the damper produces no congestion whatever, and after you reach that point you can throw your damper wide open without it making any difference. I can also show any of the members, if they care to see it, a bench operating, closed up absolutely tight, no secondary air being supplied, the flue gas showing only 14 per cent. CO_2, where it should show 2½ per cent. CO_2 by volume, if no excess of secondary air was being supplied. Now, one great trouble with our present benches is the leakage in the bench and leakage in the full-depth benches—and by full-depth bench I mean that bench where both primary and secondary air are preheated—the leakage will often be so excessive that very little of the air passes through the regular flues, most of it leaking out around the door and through the cracks of the brickwork. We must have tighter joints for our recuperators and we must operate them more carefully to prevent their cracking and developing leaks through use. It is also possible to patch the leaks in a recuperator when the bench is in operation. We have done this much in the same way you patch a retort. The leakage in the recuperator detetmines to a great degree the economy of the bench in various ways. It is not as important as it might first seem under certain conditions of operation. If the fuel gases reach the top of your waste flues at 2,000°, any leakage or secondary air through to the flue gas flues will lessen their temperature and lessen the amount of heat which can be picked up and carried back by the secondary air, and the difference in actual temperature between the products of combustion, just before they enter the waste flues and after they have made about one lap, will show the considerable leakage which occurs, as the loss will be evidenced by a flue gas analysis.

The President—Mr. Mann, have you anything to say on the subject of bench construction?

Mr. Howard E. Mann—The material we use is what we have been using for a great many years. We insist on our material coming up to the specifications supplied. For several years we imported a German material for use in our combustion chamber, and for the past three years we have been using material made in the States which we find to be as well adapted to the purpose as the German material. That is all I have to say, I believe.

Mr. Osborne—In reference to water gas, some of the gentlemen seem to have either very bad material in their generators, or I have had a different experience from that noted. I have noticed the material used by us lasting as much as 4 years in the generators, and 3 years is not an uncommon thing in a hard worked generator working every day practically, except a few times when it was down for the purpose of being overhauled. I think some of the trouble is due to the size of blocks used in the generator. In some of the smaller works, especially

1. For the text of the Baehr paper see JOURNAL, *ante*, p. 686.

they use a block cut or made to fit a certain circle. This is true, in a good many instances at least I am quite sure, because I know you can send to the Laclede people and get from them blocks cut to fit certain machines made by certain manufacturers, and which will go right into the particular circle of a particular generator. These blocks in a good many instances are quite large, and when one of them starts to go to pieces the whole block is rendered useless. If it is large of course it makes a large opening and gets to the shell of the generator much quicker. I have noticed that the best results in lining these generators are obtained by the use of smaller pieces conforming to the circle, the smaller portion towards the fire, so that when it breaks it makes a very small opening. Just like small window glass in a window; if one is broken it does not affect the whole window to nearly the same extent as it would if the glass were larger. I think some of the trouble in our generators has been occasioned by the use of too large blocks.

The President—Are there any further comments on the paper? If Mr. D. R. Russell is in the room we would be very glad to hear from him.

Mr. D. R. Russell—Mr. President, I unfortunately got in late and have no opportunity to examine Mr. Baehr's paper until it was read here this morning. I glanced over it and feel that it is certainly a very valuable contribution to gas literature. The position Mr. Baehr takes in regard to the quality of material I think is correct. No manufacturer can can produce goods or sell them at a low price—I mean by that, at cost of manufacture plus cost of selling—and continue very long in business. He has to make a profit somewhere. It is a very easy thing to dig clay out of a mine, rush it into your works, pass it throngh the machinery, push it out to the consumer, and get your money out of it and make a profit at a much lower cost than it will require another manufacturer who is honestly trying to produce a high grade of goods. In the first place, a manufacturer of fireclay should carry at all times at least twelve month's supply of raw clay on his dump so that it can and will be properly weathered. No matter how high the grade of clay is the weathering process will bring out impurities. Another thing, the clay should be carefully picked. An expert man going over a pile of clay will see with his eyes impurities which very often are in the shape of nodules which do not disintegrate by the weather. He can pick these out. Then the clay must be properly manipulated, and to do it properly the company must have a large and extensive plant covering different kinds of machinery used for different purposes and different grades of mixture. Furthermore, to secure competent skilled labor the manufacturer must pay a good, round price. I think it is more important, or at least as important, to have experienced men manipulate the clay products in the course of manufacture than in any other line of business that I know of. Take an experienced machinist and put him at a lathe; in a short while he can take up almost any line of special work and adapt himself to it. But in fireclay goods the looks and appearance of the material and the feel as he rams the retort, the resistance that is offered, all indicate to the experienced fireclay man the consistency of the material. The feel or the resistance indicatiug the density will determine him whether he will ram it hard or light. Now to do that you have to pay good wages to your men. In manufacturing water gas material, or materials for water gas linings, you have to contend with a great many things. For instance, one kind of oil will affect a certain kind of brick differently than another kind of oil. You have to study the conditions that prevail in certain sections of the country. As a rule, one section of country will get a different grade or kind of oil than another. You may supply brick at one point that will cost just as much to manufacture as another, and yet will not do nearly as well for the purpose. Another important consideration is to have the right kind and shape of block for linings, and also the right grade of brick for the checkerwork. In bench construction we all know a great deal is dependent upon the mason work. It has a great deal to do with the life of a bench. The joints, of course, must be laid close, and instead of being pointed up with clay or soft mortar, the brick should be cut where necessary to conform to the wall as laid, and if it is necessary to use for any reason rather a large joint, a great deal of ground brick should be mixed in with the clay to make it stiff and then have it well packed. To secure this class of work only the best and most experienced masons should be employed and they invariably command the highest wages. The shape and design of the blocks have a great deal to do with holding up the retorts. The retorts may be very excellent, but if not set on properly designed blocks the blocks themselves will give down, permitting the retorts to sag and the bench in a short time goes to pieces. Also, the bench should be designed if possible to keep the heat uniform, not concentrating it at one or more points. Otherwise, it will destroy the blocks or retort at that point and your bench will go to pieces in a very short period of time. I honestly believe that we can and do make in America as good retorts as are made in the world. I believe that the blocks manufactured in this country are as good as those made abroad. I think the results have shown it and will show it. They claim in Europe a longer life for the retorts than they do in America. They do not carry the heats over there that we do here. As a rule, they run 6-hour charges, while here the rule is to run 4-hour charges. Therefore, a retort will last longer and will produce a little more gas during the life of the retort on that side, but when you take into consideration the extra heat you have on the retorts in America, you can readily understand that they will go to pieces a little sooner. It is like driving a horse rapidly for a short while, or driving him slowly for a longer time. I agree with Mr. Baehr in his statement that, if there was a disposition on the part of purchasers to insist upon it, there would be a better average production of fireclay goods. There is a tendency, however, always in every line, to buy as cheaply as possible. Fireclay goods, however, are harder to select from or judge from analyses than any other production that I can think of. The appearance does not always determine it. Take certain clays that by the analyses would show a very high grade, but, owing to the component parts of the clay, although it will stand a very high heat, even as high a heat as any other material, it will shrink enormously thereby letting down the retorts, or if it is a water gas set it will open up the joints and let the fire get in and destroy the lining. I think about the best way to determine that is to put the brick under test. To do that is rather difficult, as a specially constructed kiln is required in which you can produce enormous heats by the use of oils or other fuel with a forced draft. This subject is a very large one and it is impossible to cover it in a short while. I believe that is all I can add to the valuable contribution offered by Mr. Baehr.

I wish to correct a typographical error on page 84 of the printed paper as read at this meeting. It reads, "And clays containing free silica are found to be somewhat fusible in the pressure of 3,024 per cent. of fluxing matter." It should read, "To be somewhat fusible in the presence of 3 per cent. or 4 per cent. of fluxing matter."

D. McDonald, Louisville, Ky.—It seems to me the question of the chemistry of fireclays is such a big one that it is utterly hopeless for the ordinary gas man to expect to go into it thoroughly. What we could do would be to have the experience of all the gas men as to how long the manufactured product of certain fireclay people does actually last in the practical work of gas manufacture. That is about the only thing, so far as I can see, that would be of any substantial or practical value to the ordinary gas man. When you say that a gas company should be willing to pay higher prices and thereby get better goods, there is simply no sense in it. It doesn't necessarily follow that a high price will insure good goods. If a fireclay manufacturer comes to you and makes certain representations as to the quality of his product, saying, "Here are my goods," how can you find out whether he is stating the facts or not? Chemical analysis means nothing. To expose firebrick to a high heat means nothing. It may stand a high heat and not be able to stand chemical abrasion. The one thing that will enable us to secure the best products would be to have some central point to which we could write and find out from actual experience how long a particular brick will last in the practical operation of gas manufacture. Before we leave this subject, however, I would like to get the experience of some gas man on the point that my friend mentioned with reference to the generator linings wearing out a little above the grate bars. My experience has been that the linings in the carburetter and the superheater are as good to day as they were 4 or 5 years ago when they were put in, but the generator linings immediately above the grate bars were gone in less than one-half that time. In attempting to replace them you naturally let the work above down a little. Now I have seen a publication to the effect that cement could be made of carborundum, or some other material, with which these bricks could be brought out to their original surface, and yet be hard enough to withstand the wear. If there is any gentleman here who has had any experience on this subject, I would be glad to hear from him.

The President—Has anyone had any experience of that character? It seems to be a new suggestion.

Mr. Coombs—One thought has occurred to me in reference to this valuable paper, for it seems to me it is one of the most interesting papers we have had and it is certainly very instructive. But Mr. Baehr proceeds to some extent at least to discuss the question from the manufacturers' standpoint, as to what kind of material we should get from them. I think another thought is to be considered on the other side. I believe that the manufacturers in a general way attempt to furnish goods that are intended to be satisfactory. But I believe that some gas companies so handle that material as to place the

manufacturer in a wrong position. It has been noticed that if we receive the same material at different works, at one of the works it will give very satisfactory results, and the same material at other works will not give nearly as satisfactory results. I think it would be a matter of profit to all of us to have some one who is qualified to write a paper on the uses and abuses of good material. I think there are two sides to that question.

The President—That would be a very timely topic and we will hope to have some such subject treated at a later meeting.

On motion a hearty vote of thanks was tendered to Mr. Baehr for his very valuable and instructive contribution to gas literature.

The President introduced Mr. B. W. Perkins, of South Bend, Ind., Editor of the

NOVELTY ADVERTISING AND NEW BUSINESS METHODS DEPARTMENT,

who read the following budget:

I have the following to report under the head of "Novelty Advertising and New Business Methods Department:"

No. 1.—By Mr. Irvin Butterworth, Detroit, Mich.: "When weather and our orders will permit, we have a coke parade in the streets. On one afternoon we hired a band, made up a procession of loaded coke wagons, including our own and many from various dealers, and marched through the principal streets preceded by a brass band, each coke wagon containing a placard 'Genuine Gas Coke,' etc.

"So far as possible we fill our coke wagons at night with orders for the following day, and start them off in a parade each morning from the works, the procession remaining intact as long as possible as the various wagons go through the streets on their way to the customers' houses. This scheme costs little, and is quite effective.

"For the purpose of educating and qualifying our employes for pushing our business we are conducting this winter a series of Saturday night lectures on various subjects pertaining to the gas business. For instance, one evening we had an expert from the Welsbach factory at Gloucester, N. J., who delivered us a lecture on the Welsbach burner. Next Saturday night we shall have a lecture on the gas meter by an expert meter maker. On the following Saturday night arrangements have been made for a lecture on the subject of gas itself. These lectures are attended by from 150 to 200 of our employees, and are proving beneficial. At the close of the lectures light refreshments are served."

No. 2.—Mr. Earl H. Buck, Vincennes, Ind., uses an 8-page booklet in which he tells how coke is made, why it is more economical than hard coal, why it will not injure stoves or furnaces, the value of coke as a general fuel, how best to burn it, etc., together with the price. These booklets are distributed throughout the town, and he says have been a great aid in disposing of his coke.

No. 3.—By Mr. C. Edgar Titzel, Lancaster, Pa.: "We advertise that we will give water heaters away, charging $5 (which is the cost of the heater) for connecting same. The first year we were in business (1902) we sold 725 heaters, last year we sold about 300. During the same season we employed three or four good solicitors for the purpose of selling stoves, heaters, etc., paying them a commission of 10 per cent. on all sales. We have been very successful in doing a large business in this way. We have never done any newspaper advertising, all our advertising having been done by circulars, personal letters, and large posters. In regard to methods used, I would say that I can hardly tell which method we did use. We simply hustled after all the business in sight."

No. 4.—Wm. B. Johnson, of Madison, Wis., used the following changeable sign: "We have an electric sign, composed of 25 blocks, extending across the street in front of the office on poles about 35 feet high. The blocks are 13 inches wide and 19 inches long, with 25 receptacles so arranged that by putting in lamps it is possible to make any letter out of any block. With this sign we can make any "ad." that can be spelled with 25 letters.

"In the business district of the city, we have two blocks with five 6-glower Nernst lamps in each block suspended in the center of the street, the merchants located on the street thus illuminated paying enough each month to cover our charges. These lights are burned every evening from dusk until 10 o'clock, the complaint man turning them on and off.

"We have a wooden frame 36 inches long, 27 inches wide and 40 inches high, covered with what is commonly called chicken fencing. This we fill with coarse coke and have about 15 red automatic Hylo lamps distributed around so as to be near enough to the outside to show the light, but not near enough for the lamps to show. In the daytime people that pass stop to look at the coke, and at night, when the lights are burning, it looks as though the coke were on fire, and attracts considerable attention."

He also advertises to thaw out water pipes by electricity.

No. 5.—S. O. Fulkerson, of St. Charles, Mo., says: "We carry a card in each of our daily papers and agree to pay $1 for information leading to the sale of a gas range. The card contains a blank form for name of prospective consumer, also name of claimant. None but old consumers are eligible. Upon receipt of signed claim we acknowledge it and file it in order as it comes. Last year we paid over $100 on claims. You see the old consumer recommends it and places himself in an embarrassing position when it comes to a kick. If properly carried out, it will increase a company's business 50 per cent. Such has been my experience."

No. 6.—F. H. Sawyer, Norfolk, Va., writes the "Street Railway Chat" and the "Gas Company's Catalogue." Samples of each are herewith inclosed and explanatory notes of each as follows:

"'Street Railway Chat' is an advertising and information leaflet issued weekly by allied gas, street railway and electric companies located hereabouts. These leaflets are placed weekly in brass pockets arranged on each side of the car within easy reach of the passengers. Several thousand leaflets are issued on Saturday of each week and the pockets are kept well filled for the first 3 or 4 days after leaflets are issued, but the supply is usually exhausted by the third or fourth day. This indicates that the leaflets are eagerly sought for by the riding public, and I have no doubt, from the number of complimentary expressions that we have heard on all sides, that the advertising matter reaches nearly the whole population of the town. It has been the aim to make this leaflet short, bright and to the point, and to contain information and advertisements that are especially desirable reading matter to the public.

"Now, regarding the catalogue issued by the Gas Company, will say that we have long since come to the conclusion that the majority of the gas customers are not acquainted with the various makes and styles of gas appliances. They may know what a gas range is, but have never heard of a gas water heater; may know that the Company sells a bath-room heater, but have never heard of a gas grate; may know that the gas range is a good thing, but complain that the old waffle iron that was used on the coal range cannot be satisfactorily used on the gas range, not knowing that there is a special waffle iron made for the gas range. In fact, the idea first suggested to our minds was to let every purchaser of any gas appliance know something about every gas appliance that the gas company sells, and in reference to radiators to show a cut of the radiator and also give size of room that it would heat; and now we find that people are coming in with the leaf turned down in this catalogue, telling us exactly the kind of radiator they want, deciding themselves as to the kind best suited for them. This catalogue contains also cuts of Welsbach lamps, Humphrey arc lamps, gas furnaces and the Monarch water heater, churches using gas for heating, and a short write-up for coke, also for tar. We do not expect to sell any gas furnaces in N. rfolk, yet I am sure the idea of inserting a cut of one of these in our catalogue was a good one, just merely to make something to talk about."

No. 7.—By F. H. Sargent, Lawrence, Mass.: "In regard to New Business Methods and Novelty Advertising, I would say that in trying to sell gas means that we must sell the appliances. We do not sell fancy gas fixtures but leave this to the city gasfitters, but we do sell side brackets at about cost, and we do some fitting to connect up these brackets at very nearly the cost. The idea is to get a new consumer whose home has never been piped to use gas. Then again, in trying to sell a gas range to parties having no pipes in their houses, we pipe them free of charge, with a light in the kitchen; the idea of this is to get them to use gas for lighting in their kitchen during the winter months as well as the summer.

"Our scheme for selling ranges is as follows: We lay in our stock of ranges for the season about February, then we start to advertise extensively; our ads. read: 'Special discount for March, 20 per cent. from our selling prices; for April, 15 per cent.; May 1st and after, 10 per cent.' We do this because parties who intend buying a range see this ad. and order in March. This gives our fitters a chance to set up a good many ranges in the spring and it relieves us of the congestion in May and June. About April 1st we start our canvassers out and try and push the gas stove business all we can until July 1st; then, of course, the rush is over.

"Giving this extra discount we find that 30 per cent. of all the stoves

we sold were sold in March, 22 per cent. were sold in April, 17 per cent. in May, 10 per cent. in June, and after July 1st, 21 per cent. We think this a good scheme and have profited by it. I would also say that we sell and set up ranges practically at cost. Advertising is certainly a help to any gas company in trying to dispose of ranges; not only newspaper advertising, but the distributing of booklets and posters for billboards distributed in all parts of the city.

"In selling heaters we have no special scheme, only a large supply constantly on hand in our showroom during the fall and winter months. We make a specialty of a small cylinder stove which we sell for $1. In the fall we fill our show windows up with these heaters, and placard the windows with signs relative to these heaters. We have done very little with water heaters in the past, as the expense of them is more than most people want to pay, but the coming season we hope to get up some scheme or hear of some novel way of disposing of them. We cannot use anything but brass heaters here."

No. 8.—M. H. Cutcheon, Appleton, Wis., says: "The only idea I have at present which I have never seen used is: Furnish a small coke burning heater for kitchens at a nominal cost, or make a present of the heater with a 5-ton order for coke. In this way stimulate the sale of fuel gas in winter as well as the sale of coke."

No. 9.—Henry I. Lea, of the Western Gas Construction Company, Fort Wayne, Ind., gives us this: "From Evanston we supplied four towns, and for each town employed an independent card index, arranging the streets alphabetically and houses numerically, having one card for every single house, and a card for each flat, in case of apartment buildings. On the front of this card was a list of all of the appliances which we might hope to install for domestic use.

"On first making the round the solicitor having this card indicated on the front of the card the exact number and nature of gas appliances in use in this house or flat. On the reverse side is a series of questions covering this same range of appliances in the following manner:

"'If no gas range, why not?' 'If no bath water heater, why not?'

"Opposite each of these questions the first solicitor makes note of the objection given which prevents his sale of the appliance in question. These notes are all of permanent record. The next solicitor in making the same round (and, by-the-way, we never send the same solicitor through a territory twice in succession), has for his guidance the objections previously given, and my plan was to arrange for each particular case some way of overcoming the objection first given. If the second solicitor fails to sell the apparatus he must record the objection given to him, and when the third solicitor makes his round, he has instructions to overcome both of the objections previously given in some special manner, which we can afford. This method of going after new business proved very satisfactory indeed, as I was able to more than double the previous year's sales of appliances under old methods."

No. 10.—H. M. Moore, Austin, Tex., says: "I am a strong believer in solicitors as a means of increasing our consumption. I started in the business as a solicitor and flatter myself that I made a good record as a business getter. My plan has always been to tell prospective consumers as nearly the truth regarding the use of gas as it is possible. The question is usually asked: 'What will it cost for a family of 2, 3, 4, 5 or 6, etc.?' I simply tell them that I am unable to answer such a question, as some large families use less gas than some small ones. 'What is the average cost per month?' is another almost universal question. I answer this by stating that there is no average cost that can be applied to all, as some people are economical, while others are extravagant in the use of gas. If a solicitor knows his business he can sell more ranges and secure more light consumers in one year than 5 year's advertising will do. In 9 months I sold 329 gas ranges, besides looking after the entire business of one town; laying mains, running services and piping houses. Nine years would not have done this in two towns by advertising, as I was enabled to meet all their objections and answer all their questions, which could not have been done by an advertisement system. I did not use $1 in advertising during the year 1903, and yet put out 130 gas ranges in this, about as poor a gas town as there is, owing to past poor service. By dealing honestly with the people, their confidence can be gained and business increased in any community. I hope to remove all the prejudice against our Company here, and get a large increase by my personal solicitation. Our business was increased by 10,000 cubic feet per day during the last year. The two towns referred to above have a total population of about 12,000."

No. 11.—J. N. Dickerson, Dunkirk, N. Y., writes: "The only thing we do for business is, we do it all from main to house, and do it cheap as possible, and when we are done they are ready for gas and one bill to them. If this is new to you, you can credit us with the system. We control about 12 plants, and this is the only one we do all the work in. Last year it proved to be very satisfactory to us and to the customer."

No. 12.—C. N. Whiting, Boston, Mass., says: "The past few years we have adopted a system of advertising by using small printed slips with gum backs attaching them to our bills. The result of this method has been very gratifying. From time to time we have placed advertisements in the daily papers, but it is very hard to estimate the benefit that this has been to us."

No. 13.—R. Shacklette, Adrian, Mich., writes: "We confine ourselves to direct statements in the newspapers mostly. The 'cheap power' ad. obtained for us a consumer on a 25-horse power engine with a guaranteed consumption of 5 millions per year, for a period of 5 years."

No. 14.—J. W. Wrenn, San Francisco, Cal., says: "The best method which we have found for pushing the sale of gas appliances has been liberal use of newspaper space and a persistent canvass by solicitors. If there is anything better than this we should be glad to hear of it."

No. 15.—Irvin Butterworth, Detroit Mich., adds this: "As to the request for a statement of new business methods, I will give you something on this subject in a day or two. In the meantime I might call your attention to the little scheme that is mentioned on page 76 of the January 12th issue of the *Journal of Gas Lighting*. It describes the placing of a card by a gas company that maintains Welsbach lights conspicuously on the walls of the various stores, stating, 'The lights in this store are maintained by the gas company.' I am sending you by this mail a photograph of a scheme for advertising coke which we are using in our office and which you may deem worthy a place in your novelty advertising department. It represents a glass showcase attached vertically on the four sides of a square column in the lobby of our main office, each of the four faces of the case containing coke of a separate size, the whole device representing the different sizes of coke which we market. Underneath this case is a table also surrounding the column on all sides, upon which consumers write their checks, etc. The exhibit is very conspicuous and cannot fail to be seen by practically every person who enters the office."

No. 16.—F. R. Smart, Jr., York, Pa.: "Inclosed you will find a copy of our 'Gas Herald.' This is a scheme of advertising stoves, fixtures, etc. It is published once every month in all local papers and a number of copies are struck off for delivery as dodgers by canvassers. It is devoted to the uses to which gas may be put, and is also a means of communication between ourselves and the public. We try through its columns to educate our people to the use of gas and how to get the most good from the least consumption.

"You will note in this number under the head of 'propositions,' that we offer to place a bracket in a bedroom free of charge when the house is piped. We selected a bedroom with the idea that people liked to have their neighbors know that they use gas, and placing a light where we do does not make it evident that the tenant has that luxury, and for this reason they are much more liable to buy the fixtures for their hall and parlor. The results have been very satisfactory, as at least 50 per cent. of those receiving brackets have returned for fixtures in other parts of their houses, and before the year is up we hope to have other fixtures in all."

No. 17.—B. C. Cobb, Saginaw, Mich., writes the following: "We are great believers in newspaper advertising and patronize our local dailies extensively. We also use our gas bills for advertising purposes, and think this a successful method. Sometimes we simply print across the face of the gas bills some particular thing we wish to call attention to. Other times we use small stickers, attaching them to all bills going out of the office. We are firm believers in street car advertising. We have also from time to time issued attractive pamphlets, describing and illustrating the advantages of some certain article. Have done this most extensively in the coke business.

"We have thought it advantageous to make free service and fuel connections, and have followed this plan since we got control of this property. We have had several days when heating stoves were given away, charging only for the connections. This was successful for some time, but the idea is worked out. We are now planning to make a house-to-house solicitors' attack, to find out exactly how many people use gas and for what purpose, and how many use coke, and if not, why not. This information will be compiled in our office systematically by street and number, in order that our new business department may follow up each particular case where there is a chance for any new business.

"The Grand Rapids Gas Company, I believe, a year or two ago, sent up on a certain day several thousand kites with advertising matter printed thereon. They also had a scheme in Grand Rapids, which I believe was first used in Denver, of letting a lot of dogs loose about the town, covered with blankets with advertising matter thereon.

"We have been very successful in piping old houses for illuminating gas, and our method in this has been to pipe and fixture houses of 5 rooms or more on a flat contract price. Price on fixtures and piping being figured at about cost or a little less, we assuming that the majority of customers would exchange some of the fixtures given on contract for more expensive ones, upon which we would make a profit. We have piped in the last two years between 1,600 and 1,700 houses, with a net loss of not more than $250 for actual work, material and everything."

No. 18.—F. H. Hutchinson, Camden, N. J.: "I take pleasure in sending you under separate cover, in compliance with your request, two copies of the gas appliance catalogue issued by this Company, compiled by the writer some 4 months ago, with which we inclose a return post card and with which we have had quite some success in the South Jersey division of our Company. We have originated no new ideas in particular in our new business department during the past year, but we find that our best and largest sales are made by forwarding circular letters to prospective consumers on the lines of our mains who are not using gas for illuminating or fuel, calling their attention to the prices at which we install house piping, fixtures and gas ranges, which is later followed by a house-to-house canvass by our solicitors."

No. 19.—Dr. M. M. Fenner, Fredonia, N. Y., says: "I have learned now to collect our bills. Made an agreement for a 25-cent advance on account of rise in price of coal, then gave it back to users if they would pay their bills. They paid up and continue to discount, and we find business much more pleasant."

No. 20.—W. A. Aldrich, Spokane Falls, Wash., pipes old houses at a little above cost, putting in fixtures which are paid for in intallments.

No. 21.—Chas. R. Price, New Bedford, Mass., writes: "In the sale of gas stoves our plan is to have two prices for stoves, one price being as close to cost as is consistent with business methods—for we do not believe in giving away things at large and discounts from cost in order to stimulate the business. Thus, if a stove costs us $11.50 delivered at our works, to sell it at a fixed price of $12 delivered and set up, with 15 feet of connecting pipe, if needed, free. The next price on the same stove is to add $4 to the $12 as above; this $4 entitling the consumer to 5,000 feet of gas, the regular price of gas being $1.10 net, per 1,000 feet. We find this is quite an inducement to people who are using a gas stove for the first time, as well as others who know of them and their usefulness and convenience, in that they feel free to use this low priced gas for experimenting, and do not condemn the stove if the first time it is used for baking they do not meet with the success which they have ordinarily had with their coal stove. Our purpose in giving them the gas in this way is explained to the consumers to induce them to experiment and see what can be done with the stove. All meter bills, until the consumption of this gas is accomplished, are filled in in red ink and receipted. We have usually put the limit on these sales, that the gas should be consumed before the expiration of the year. We believe by these means we have induced many of our customers to get in the habit of using the stove freely, and that is good advertising on our part. In addition to this we use the daily papers, especially during the stove season, quite freely, as well as the backs of our bills, which are changed each month and printed in different colored ink each month. I inclose you samples of these bills so that you may see the character of our advertising in this direction."

No. 22.—E. M. Osborne, Valparaiso, Ind., sends us the following: "One of the best advertisements in our business is the Kern burner. It saves the gas per burner, and does away with two-thirds the number of burners. The people are satisfied and we find satisfied customers an advertisement for us. In February, 1903, we placed a few of these burners in a poolroom, stating if they were satisfied, well and good—if not, it would cost nothing for the trial. They proved very satisfactory, and believe this customer sold at leat 100 of these burners, and he has proved a good friend and talker for us. Since then over 800 of these burners have been placed here with scarcely a kick. We use the Holophane spreader for stores and the down-throw globe for dining rooms and libraries. They give about 100 candles, with a consumption of 3½ feet per hour, at 20-tenths pressure. We advertise coke in the daily papers, with much success. We make the 'ads.' as attractive as possible. We offer small quantities for trial free, and one trial seldom fails to bring further orders. We do not crush our coke, but find demand for all we make, for furnaces. Some of the best koown men here use coke and hard coal, and have given us a statement of results favoring coke. People believe these statements while they do not always take what we say sincerely. Our gravel roofers use coal tar almost exclusively, and like it.

"We opened a fitters' department here last spring, the Company never having done any work of this nature before, just allowing customers to have work done anywhere they pleased. This department paid here, the profits being sufficient to pay for all distribution work. Besides this, the work is uniformly done and carefully tested, inspiring confidence in our patrons.

"While we can do this work much cheaper than plumbers do it, the profits enable us to maintain two or three men, who can be sent out on trouble work promptly, thus giving our patrons the idea that we are really interested in giving them good service. We have pushed water heaters and other gas appliances with good success."

No. 23.—M. T. Walker, Fort Madison, Ia., says: "Relative to the Advertising Department of the Ohio Gas Light Association, I wish to give you a little incident that happened in a town in which I once lived, which demonstrates the wide-awake spirit that every successful gas manager should have.

"During the Spanish-American war some United States soldiers were stationed there, and one day, through the accidental discharge of a Krag-Jorgensen rifle, a bullet pierced a hole through the plate glass window in the post office without shattering the glass. Nearly every one entering the post office during the following week was interested to see the place where the bullet had gone through. A wideawake merchant took advantage of this occasion and placed a little card just above the bullet hole, 'Buy your books and stationery of Allen & Constantine.' This proved to be a very fine advertising medium, and I give it to you in case you desire to use it in your department of the Association work."

No. 24.—E. M. Highlands, Clinton, Ia., says: "Replying to your recent favor regarding novelty advertising, would say that it has never been the policy of this Company to go into any novelty or humorous advertising schemes, we believing that, as gas is a perfectly legitimate commodity, it should be handled in a dignified manner. We have mailing lists covering every department, and when we desire to increase the sales in any one of these departments we mail personal letters or postal cards to cover the list, then use the follow-up system to get the results. This we find to be cheaper and more effective than newspaper advertising, and we have obtained most excellent results from the above method."

No. 25.—F. P. Vogl, Claremont, N. H., uses a card index ledger showing 5 years on a single card, which he thinks is a decided help in a small gas business.

No. 26.—M. N. Latta, Charlotte, N. C, states: "We have found street car advertising most profitable, and inasmuch as the card spaces in the cars are all contracted for, I have utilized the spaces occupied by the mirrors in the cars and have pasted over them such advertising matter as the inclosed poster (see semi-circular card). I also send you, under another cover, a copy of a cook book which I compiled, in combination with testimonials from various gas range users of this city. Testimonials and receipts were solicited and a prize offered for the best, and inasmuch as the contributors are all women of more or less prominence, and these have been very generally distributed in house-to-house work, the 'ad.' has been an extremely good one."

No. 27.—The Gas Company at St. Charles, Mo., writes: "We offer $1 to any person handing us the name of a party who might use gas and to whom the claimant has recommended the use. If said deal is consummated by us the party making such claims is paid the commission. We have quite a string of checks to send out each month since the scheme was started last April. We have a regular insurance department, charging 10 cents per light per month. Our men in this department spend 2 days each week on the insured lamps. While there is no direct profit, at the same time it insures a good light at all times and gives a general satisfaction, which our phenomenal increase in sales of gas for the past 2 years will show. At the spring of the season we send a man to every customer and put their stoves and hot plates in condition. The increased send-out is at once noticeable."

No. 28.—R. J. Marks, Lexington, Ky., says: "I got some very good lighting customers from the electric company with the gas arc lamp, and tip-top service. When I took charge of the plant there were only

about 25 gas arc lamps in town. Now I have about 200. I install arc lamps free and charge 25 cents per month for cleaning and maintaining them where they use less than 5. Over that number no charge is made other than for the gas used in them. I find no trouble in holding my own with $2 gas against 12 and 10 cents per kw. for electric light with a 10 per cent. discount. My success I attribute to a better light and good service.

"With gas stoves, I start early in the season with booklets and advertising matter which I leave at every house on the gas mains, and in any new territory we expect to open up. Later on this is followed up with another lot of advertising matter left in the same way, keeping the newspapers hot in the meantime with our story. When it commences to get warm, we put a solicitor in the field canvassing the entire territory. We pay our workmen $2 each for every stove they sell during the season, not paying them anything until fall, when all stoves are paid for. So far I have not sold any stoves on the easy payment plan, and consequently have no unpaid stove bills or gas stove junk. When we sell a stove and it is set in place, we have our workmen instruct the person who is to operate it thoroughly as to the best and most economical way of handling the stove. Then we follow that up with a lady who just drops in for a few minutes, talks stove and shows them anything they do not understand. We simply keep going after them and telling them our story. Our Company does not think it wise to sell fixtures, and we make water gas. We do nothing in the appliance business except sell stoves and Welsbach supplies. Our price for fuel gas is $1.25 per 1,000, but with that we sell some stoves and expect to put out a good many this season."

No. 29.—G. H. Rettew, Selma, Ala.: "I cannot submit any novel ideas in the way of securing new business, but might say I have doubled the gas sales in one year for my Company by persistent advertising in papers, sending out cards with bills, and furnishing a book of rules with some reading matter and cuts, and this latter has proven very satisfactory. A consumer secured for illuminating gas receives one of these brochures and is naturally interested in the rules, thus reads a part at least, probably reads nearly all the book, and very soon we make a sale of a hot plate, water heater or something of the kind. The conditions here are very different from those obtaining in your section. Nearly everyone in your section is familiar with all kinds of gas appliances, and if they don't use them it is because they don't want to. Here we have to educate the people to use before the demand is created."

No. 30.—F. W. Stone, Ashtabula, O., says: "We had a float in the labor parade last September. This was not a novelty in itself, but on the float we had a gas range which was supplied with gas by 2 common 40-gallon range boilers, in which the gas was stored at 90° pressure. A supply of cookies was provided, and also some pastry, and two chefs made and baked cookies which were distributed to the crowd. The hot cookies demonstrated that 'gas' was 'hot stuff.' Appropriate banners decorated the float. The advertisement took well."

No. 31.—The Ideal Manufacturing Company, Detroit, Mich., suggests the use of iron toys as a novelty in advertising gas appliances.

No. 32.—By T. W. Humphreys, Poughkeepsie, N. Y.: An illustrated magazine on the subject of gas appliances and general topics of the home interest. This idea is used by a furniture dealer in our vicinity with considerable success, and would apply to the gas business as well.

Special Circulars.—Issue attractively gotten up circulars on good paper, treating with one subject only at each issue; these to be distributed in a manner which will put them directly in the hands of the consumers.

Street Card Advertising.—With a card which would compare in design and quality favorably with any other cards used in that particular city.

Bill Posters.—Post the required number of attractive posters according to the size of the city, which posters must be of the very best style and make-up.

Circular Letters.—Printed with mimeograph or a regular press with typewriter type, the circular letter to be signed by the superintendent or manager and addressed to the consumer or non-consumer, as the case might be. The above methods, together with house-to-house canvassing, would make a very effective campaign.

No. 33.—Thos. D. Miller, New Orleans, La., writes: "One scheme that we worked here last summer, to get rid of a lot of old shop-worn stoves, was to advertise to give them away, parties paying $15 for gas in advance, to be used in 1 year. In this way we succeeded in getting rid of 2,000 stoves which we were finding great difficulty in selling at $5 apiece. We are following up these sales in hopes of selling them better stoves, as soon as they fully appreciate the advantages of the gas stove. We are just beginning a series of district cooking schools and will try and interest the various lady societies, giving them special course of lectures. I believe this is going to result in great benefit to our gas range business."

No. 34.—Wm. McGregor, of Pawtucket, R. I., uses a very novel scheme for the sale of coke. He uses a paper bag that holds a little less than a bushel, fills it with crushed coke and wholesales to grocery stores, etc., who in turn retail them to their customers. He informs me that quite a lot of coke is disposed of in this way. The writer used the same scheme in the introduction of coke by taking a wagon load of filled sacks, with two solicitors, working a street at a time, selling them the coke on the spot, and then at the end of the week they were to go around and secure orders for larger quantities. "We have found this a very excellent way to introduce it, as people can try it for a very small outlay."

The samples of printed matter received from the different contributors are here for your inspection.

Editor Perkins, continuing, said—Another method of advertising not embodied in the prepared report and employed by us is to build a cheap shanty and in it install a gas range and when main extensions are made just keep the house along the line of pipe thus exhibiting the workings of the stove to the residents and passersby along the street. In conclusion, I may say that if the enthusiasm and energy displayed by our worthy Secretary, Mr. Jones, in his campaign for new members, was followed up to the same degree in selling stoves it would prove a profitable scheme.

Discussion.

The President—This is a very able paper and we are all indebted very much to Editor Perkins for his zeal and ability in handling it so well. It is a department that attracts as much attention throughout the country as any other single branch of the work of the Ohio Association. I have heard many favorable comments from all quarters as to the value attached to this department by gas companies in general. The companies utilize the ideas presented here in obtaining new business by adopting some of the novel methods suggested, of which otherwise they would not have knowledge.

Mr. Schwarm—A little scheme was brought to my attention a few days ago. A fellow dropped in to the office to sell rubber stamps and pads. I was busy then and did not have time to talk with him. I asked him for his card. Instead of handing me a card he just drew from his pocket a "sticker" and pasted it on my desk. It is there yet and will probably always remain there. It occurred to me that the same method might be followed up by canvassers for gas stoves when cailing on the women in the kitchen.

Mr. Chas. L. Watts—I tried a scheme last fall of offering the employees 50 cents for every application for the use of gas. We have employees who secure as many as 20 contracts in a month, at the rate of 50 cents, and it has worked so well that the 1st of March this year we offered 75 cents for each application. Some of our employees have turned in as many as 10 applications so far this month at 75 cents. We find they spend all of their spare time looking after new business, and when we consider that the amount paid goes to our own employees and also consider the small amount it costs per consumer, I think it is a very excellent way of soliciting new business.

Mr. Perkins—I would like to ask, on behalf of the department, that the members throughout the year would keep in mind that advertising is a very important feature of our business, and that contributions used exclusively for the gas business are not wholly necessary. Advertising schemes used in any other line of business can be remodelled and utilized in the gas business, and some of the very brightest methods have been employed by merchants and other business men not connected in any way with gas interests. The conclusion referred to in this department is the result of 650 letters. I do not think the importance is attached to this subject that should be granted it, and I ask that each of the members keep the department in mind throughout the year and, whenever opportunity offers, to send in such material as they can.

The President—That would be a very easy way of remembering to send in contributions when the time arrives for it. I think we are all very apt to neglect doing these things and depend upon others to supply us with different kinds of information. We should adopt the Golden Rule and endeavor to give out something as well as obtain something. If we would all endeavor to obtain something and send it in the result would be vastly better.

Mr. Stone—Mr. Cutcheon in sugggesting No. 8 proposes to furnish a small coke burning heater for kitchens at a nominal cost, or make a

present of the heater with a 5-ton order for coke, and in this way stimulate the sale of fuel gas in winter as well as the sale of coke. We all want to sell our coke and some of us want to sell it pretty quick. I would like to know if there is a line of stoves made purposely for burning coke.

Mr. W. C. Boyle—I saw some circulars last fall from a Chicago firm making a proposition of that kind, and saying if I would give the name of the dealers in our place they would bother us no further with any attempt on our part to try to work up the business. But I cannot just now give the name of the firm.

Mr. Osborne—We use quite successfully a little sheet iron stove. I do not know who makes it. It costs about $3 and we sell them at about $3.50, depending, of course, on the size of the stove, and use a grade of coke consisting of the smaller sizes. We, however, have no trouble in selling our coke without any device of that kind. A good demand for it has been created and we seem to be able to get rid of it at a good price. There is, however, a refuse that is left from screenings and the small parts that come out about like a chestnut in hard coke. This burns very readily in these little stoves, and some of the poorer classes of people are using it to very good advantage. Some people get it in their heads that they have to buy a special stove, and we cannot get it out of their heads even by showing them it is not true. So there is a demand for some kind of a stove like that. When they find that they can get a stove for $3 or $3.50 and demonstrate to them by using the coke, of which we furnish a small amount free, they use these stoves. We have sold a good deal of our refuse coke in that way so that we do not have any refuse left any more. There is a demand for it, and the people use these little stoves. It is a little drum affair standing about 3 feet high. It is of very cheap construction, and seems to last 3 or 4 years, from what I can understand.

Mr. McDonald—I would suggest that a little jet of gas be used to ignite that coke. I think it is a practical suggestion and is followed in many instances.

The President—That is certainly a good idea.

Mr. Stone—The scheme suggested by Mr. McDonald I think is all right. In Ashtabula, before we had natural gas, in quite a number of places they used gas in the summer in a small stove, and in the winter time they would abandon it, going back to the old range. We rigged up a lot of constant burners and attached them, and in place of using kindling they would stick a Bunsen burner into the stove and start the fire in that way. It helps out the gas company in pretty good shape.

On motion, a vote of thanks was tendered to Editor Perkins for his very valuable contribution.

On motion, the meeting was declared "recessed" until 2 P.M.

SECOND DAY—AFTERNOON SESSION.

The Association reconvened pursuant to adjournment. The President called on Mr. S. F. Hayward to present the

REPORT OF COMMITTEE ON MEMORIALS,

which Mr. Hayward read as follows:

To the Members of the Ohio Gas Light Association: Gentlemen: Your Committee on Memorials respectfully submit the following:

Asa S. Bushnell.—Mr. Bushnell was born in Oneida county, N. Y., September 16, 1834, and died in Columbus, O., January 15, 1904. In 1851 he settled in Springfield, O. After several business ventures, he, in 1867, became interested in the Wardner, Bushnell & Glessner Company, of which he was later the head. He served through the Civil War, being Captain of Company E., 152d Ohio Volunteer Infantry, and was later very prominent in Republican State and National politics, serving two terms as Governor of Ohio. His strong characteristics were his courteous demeanor, inimitable humor, tireless energy and sturdy integrity. He was a man of wide business capacities and large charities. He was one of the organizers of the Ohio Gas Light Association, and was a Charter and Honorary Member thereof. He was an active member of the Western Gas Association from 1883, and for many years was President of the Springfield (O.) Gas Company.

W. A. Stedman.—Mr. Stedman was born in Newport, R. I., December 9, 1837, and died at his home in Framingham, Mass., November 8, 1903. His education was acquired at Newport, R. I. In 1862 he became connected with the Newport Gas Light Company, and shortly thereafter its superintendent and manager. In 1887 he became interested in the American Electric Manufacturing Company of New York; through the manipulations of others the venture was not successful. Returning to the gas business, he became engineer and superintendent of the Laclede Gas Light Company, St. Louis, Mo., subsequently resigning to become Vice-President and General Manager of the Flatbush (L. I.) Gas Company. He remained in this position until July 1, 1903, when he resigned to retire from active business cares. He was a man most highly thought of by his associates, both as to his business and personal capacities, and will be remembered as a man whose individuality was markedly distinct. He took a prominent part in the gas industry. He was a Charter Member of the New England Association of Gas Engineers, and its Fourth President; was a member of the American Gas Light Association from 1877, and its fifth President; was a member of the Society of Gas Lighting and was prominent in the Guild of Gas Managers. He served through the Civil War, and late in life was chosen as Colonel of the Newport Artillery. He was elected to this Association March 18, 1887, and subsequently to honorary membership.

Eugene Vanderpool.—Mr. Vanderpool was born September 2, 1844, in Newark, N. J., of a prominent family, and died July 12, 1903. He graduated from Princeton College in 1864, completing his education at Rensselaer Polytechnic Institute, Troy, N. Y. Upon leaving college he was for a short time in the employ of the Morris and Essex Railroad Company. In 1866 he entered the employment of the Newark (N. J.) Gas Light Company. In 1867 he was made its Engineer, and in 1871 became its President, which position he held until 1895, when the Company was consolidated into the Newark Gas Company, after which he remained as one of the Trustees for the bondholders of the Newark Gas Company. He was interested in numerous other enterprises, among which were the Montclair (N. J.) Gas and Water Company, the Morristown (N. J.) Gas Company, and the American Gas Company, of Philadelphia. He was prominently connected with banking and other fiduciary institutions in Newark. He was an active member of the American Gas Light Association, from its second meeting, and its President in 1885. He was instrumental in founding the Society of Gas Lighting, of which he was Vice-President from 1884 to 1896, and President from 1896 until his death. He joined this Association in 1887, being subsequently made an Honorary Member. He was not a seeker after public office, but positions of public trust were thrust upon him, which his public spirit caused him to accept and discharge.

B. L. McElroy.—Mr. Burgess L. McElroy was born August 25, 1858, in Monroe township, Knox county, O. He prepared for college at Kenyon Military Academy, and graduated from Butler University, near Indianapolis, Ind., in 1882. He was an active Republican and held numerous public offices. He was also interested in a number of business undertakings. At the time of his death he was Secretary and Treasurer of the Millersburg Electric Light Company, President of the Hillsboro (O.) Light and Fuel Company, and practically owned the gas works at Wapakoneta, O. He was elected a member of this Association March 21, 1900, and died June 28, 1903. Respectfully submitted.

STERLING F. HAYWARD,
JOSEPH LIGHT,
ERNEST F. LLOYD,
} Committee.

On motion, the report of the Committee was accepted and ordered spread on the minutes.

The President called for the

REPORT OF THE COMMITTEE ON UNIFORMITY OF GAS METERS.

Mr. Charles S. Ritter in introducing the report said: The materials used in making up this report were compiled from answers to a series of questions sent out to meter manufacturers and to gas men. I feel, as Chairman of the Committee, as though we should apologize to the Association for not being able to submit a report with some definite conclusions. There seems to be, however, no uniformity of opinion among gas men as to just exactly what is wanted, and I think perhaps the development of gas meters has been somewhat retarded because the gas man has not understood it any better than he does.

Mr. Ritter then submitted the following report:

The Committee on Uniformity of Gas Meters beg to submit the following report:

For some little time after this committee was appointed, which was in June, 1903, very little was done toward a definite plan for proceeding with the subject. A few desultory letters were exchanged between the members of the committee, and the chairman was rather puzzled to determine a point from which to start. Several plans were considered:

1. That the committee should make a series of tests of all meters of different makes and ages. This was discarded because it was considered too big an undertaking.

2. That the committee should formulate a plan for and fix the rules

governing tests, which should be made by the gas companies themselves when purchasing meters. This plan was also discarded, it being considered not comprehensive enough, and because it would not enable the committee to make any definite report at this meeting.

Finally, it was decided to divide the work of the committee into two parts, one the securing from the gas companies of an expression of opinion on certain phases of the subject, and the other the securing an expression of opinion from the meter manufacturers, these opinions to be incorporated if possible in one general report. In point of fact, the committee was appointed to take up the subject with the meter manufacturers, but it seemed advisable to also secure if possible some opinions from gas companies. The general reason for the appointment of the committee seems to rest in the main on certain general statements which, for the sake of a clearer understanding, the committee has divided into three heads:

1. That the present nomenclature of meters is irrational.

2. That there is no rational relationship between the capacities of various sizes of meters as now made.

3. That meter manufacturing has been and is standing still, and that meter manufacturers are not seeking to improve their goods.

To obtain if possible the opinion of the gas companies, a series of questions was prepared and sent out to about 300 prominent gas men and gas companies. It is to be regretted that some of the gas men who are known to be well posted on meters, and who are best equipped with knowledge on the subject, did not favor us with replies. Some well-known gas men contributed, however, and enough answers were received to reasonably assume that they represent the average knowledge and opinion of the gas men. It was considered best not to incorporate all of these questions and answers in our report, for the reason that they would unnecessarily encumber it and because, in some cases, the contributors would object to having their names mentioned. Again, some of the answers were undoubtedly made in haste, and others contained errors that might subject the authors to ridicule.

Appended to this report will be found a partial list of the questions and some of the representative answers, and the committee beg to present some conclusions which they have come to as a result of their investigations.

After careful consideration one matter was purposely omitted, that of the relation the price of meters bears to their actual capacity, this being regarded as a matter for consideration between the meter manufacturer and the purchaser of meters. Taking up, first, the proposition that the present nomenclature of meters is not rational, the committee find that practically all answers received from gas companies agree that the present nomenclature of meters is rather misleading and there seems to be a desire to have indicated, either by name or on the meter, the capacity of the meter in cubic feet per hour under standard conditions.

It will be observed, from a study of the answers received to the questions sent out, that some of these answers contemplate new sizes of meters, which would mean almost a complete revolution in our understanding of the meter and the manufacture of it. Makers would be obliged to discard a large amount of expensive machinery and a great deal of confusion would undoubtedly ensue. Even should we consider the expense as justifiable, or the confusion worth bearing, it is not likely that gas companies would throw away the meters now in use and purchase new ones, and it would be many years before the new sizes would supersede the old, or this confusion end. It is obvious, therefore, that should a system of rating be recommended that could not be applied to meters now in use, it would be of no value, and would for this reason surely fail to be accepted.

It is fair to say that the present nomenclature of meters dates back nearly, if not quite, to the beginning of the gas business and it has, therefore, the merit of being time honored; but the conditions under which meters are used to-day are so different from what they were when meters first came into use that, so far as the name is taken to indicate the capacity, it may be time the name was changed. It should not be overlooked, however, that the established and legal proving rate for meters in many States is 6 times in cubic feet the number of light the meter is called, and that for this reason if no other it may be inadvisable to abandon entirely the present names.

Several suggestions have been offered as solutions of this problem, and we call attention especially to a plan suggested by one of the members of this committee, a nomenclatnre that could be applied to meters now in use. This suggested plan will be found appended hereto. To sum up, it seems to the committee that, while it may be desirable to add a further name to the meter more indicative of its capacity under present conditions, yet we do not feel warranted in recommending the entire abandonment of the present nomenclature.

Taking up the second head, that there is no rational relation between the capacities of the various sizes of meters, the committee find that there is a considerable difference of opinion on this subject. There seems to be a general impression on the part of many purchasers of meters that no rational relation between sizes exists, and that there is no rational relation between meters of the same sizes, but made by different makers.

This opinion seems to be founded on the results of tests made at various times and under varying conditions, but so far as the committee can judge from the tests brought to their attention, these results are of comparatively little value because they were not made under uniform conditions nor with new meters, but oftener with old meters evidently in need of repairs, or with meters repaired in a manner that could not be depended upon to give accurate comparative results. As a rule, the entire contention of the purchaser, that no rational relation exists, is based on the amount of gas the meters will pass under varying differential pressures.

The meter manufacturer looks at the question from a somewhat different standpoint, which is that the capacity of a meter is the product of the capacity per revolution multiplied by a desirable and economic number of revolutions per hour, therefore, in looking for an existing ratio, or determining a future one, the capacity per revolution must first be taken into consideration. We give the capacity per revolution of four well known makes of meters.

Size. Light.	Cubic Feet per Revolution— No. 1.	No. 2.	No. 3.	No. 4.
3	.111	.111	.111	.125
5	.166	.166	.166	.166
10	.277	.277	.277	.25
20	.50	.50	.50	.50
30	.769	.833	.833	.833
45	1.25	....	1.111	1.25
60	1.66	1.66	2.0	1.66
80	2.22	2.5	....	2.5
100	2.85	2 85	2.85	2.85

An examination of these figures shows the 3-light and 5-light sizes to be rather out of proportion to the other sizes, and this may be accounted for by the fact that these sizes are much more popular and competition has tended to increase the capacity. The 5-light meter in particular is used so much in excess of other sizes that it almost stands in a class by itself. Outside of these sizes the list shows that the sizes vary about as the name.

So far as capacity per revolution is concerned it will be seen that considerable uniformity exists between the meters of different makes, attention being again called to the popular 5-light size, which is alike in these 4 makes, and this uniformity extends to meters of almost all makes. If it is admitted that the capacity per revolution is the first and basic factor to be determined in calculating the capacity of a meter, it must then be admitted also that the sizes bear a fairly rational relation to each other, and that there is a rational relation between sizes of different makes.

As to the second factor in the problem—that is, the desirable and economic number of revolutions per hour—the committee have obtained from various manufacturers the results of tests made on new meters; but these tests, like those made for volumetric capacity by gas companies, have been made under such varying conditions as to have little value for comparative purposes. As an instance of these varying conditions might be mentioned that several tests were made with air and a correction made to gas, the percentage of correction not always being the same. Some were made with gas of unknown or differing specific gravity, and some with connection pipes of insufficient size to care for the full capacity of the larger meters. Some deductions might be made from such figures, but the committee preferred not to give figures unless they could be relied upon and were known to be fair to the different makers.

To sum up, the committee believe that this subject should be looked into further and that manufacturers be given an opportunity to have tests made under uniform conditions.

Taking up the third heading, that meter manufacturing has been and is standing still, and that the meter manufacturers are not seeking to improve their goods.

This seems to the committee to be rather a broad statement, still in the answers received to questions sent out there seems to be quite a tendency to believe that meters can be materially improved, and various suggestions are made in regard to particular points. The present form of dry meter has been in use for many years. It is, indeed, a remarkable fact that the meter as first perfected in the early years of the gas

business was so well adapted to the purpose of measuring gas to the consumer that meters made on this principle have continued to be standard to this day. Modifications of form of course have been made, and that the meter has steadily improved in quality must be true, for it is a certain fact that meters made of a quality that obtained a decade ago would not be accepted by large buyers, or scarcely find a market except in remote districts.

The committee take for granted, therefore, that when no improvement is claimed no improvement in detail is meant. Some of the improvements suggested are already in use, some have been tried and, while possibly of merit, have not found an acceptance on the part of the purchaser. Some have not been tried because there seemed to be no demand, and some because no satisfactory device or method of application has been found. Sundry suggestions will be found in the answers to questions, but the committee have not had the time or opportunity to obtain any information pertinent to the subject.

The committee believe, however, that as a result of their investigation it can be said that meter manufacturing is not standing still and that the manufacturers are seeking earnestly to improve their goods, only hesitating before radical changes to be sure that there is an undoubted and general demand.

To summarize our conclusions: We beg to report that we have tried, in the limited time and with such opportunities as we have had at our disposal, to carry out the evident object of our appointment. If this report seems somewhat inconclusive it is because the subject is a large one, affecting many interests. We believe, however, that if the purchasers of gas meters were all, or reasonably all, in accord as to what they desired the meter manufacturer to do, either as to changing the nomenclature, or, to a reasonable extent, the conditions of manufacture, they would accede to it and co-operate in every way possible, especially if it could be shown that desired change could be brought about gradually.

And we further believe that if this Association desires to continue this subject further, that it should refer it to a representative committee.

Respectfully submitted, CHARLES S. RITTER, R. SHACKLETTE, DONALD MCDONALD, } Committee.

(To be Continued.)

The Union Engineering Building.

The preliminary work of the Conference Committee on the Union Engineering Building, in New York city, was closed last week, and the programme of competition will be placed in the hands of architects during the present week. In this work the committee has enjoyed the advice of Prof. W. R. Ware as professional adviser. The plans submitted in the competition by the selected architects and by those who enter the open competition are to be in the hands of Prof. F. R. Hutton, Secretary of the Committee, by June 15, and it is expected shortly thereafter to arrive at a decision as to the preferable plan.

The Engineering Building, on 39th street, about midway on the north side of the block, will occupy about 10,500 square feet, exclusive of the 15 feet open space reserved under the city ordinances, the outside dimensions of the land being about 125 by 100 feet. To the east of the building Andrew Carnegie has bought and reserved a residence which will be maintained at its present elevation so as to protect the air and light of the building on that side. There will be at the top of the building 3 stories held for the use of technical societies invited to participate in the benefits of the building. Three other similar floors will be reserved, one each for the American Institute of Electrical Engineers, the American Institute of Mining Engineers and the American Society of Mechanical Engineers. These floors will make ample provision for offices and each will have a large, handsome reception room, as well as board and committee rooms. Below these will come the library, virtually a double floor, although the committee will entertain plans placing the library at the top of the building.

Next below will come a large main auditorium floor, which will seat from 1,200 to 1,500 people, with 1,000 on the floor and about half as many additional in the galleries. This floor will preferably be as near the sidewalk as possible, and may have above it or below it a number of smaller meeting rooms having similar purposes, seating audiences of from 500 down to 100. There will be 6 such rooms, and these as well as the large room will all be thoroughly equipped with gas, compressed air, steam, water, electricity, etc., for the conduct of experiments and demonstrations. There will also be lounging and smoking rooms, and provision will also be made for special banquets by outside caterers and the serving of occasional collations. The floor on the street level will be appropriated mainly to administrative purposes, with 3 coat rooms capable of taking care of 1,500 garments at once, a ladies' dressing room, a bureau of information, public telephone and telegraph offices, the post office and sales department and shipping and receiving offices for books, publications, etc. Below this floor, from which probably a fine stairway will lead to the auditorium above, will come the basement and sub-basement, with provision for storage purposes, machinery, coal and operative apparatus. There will be 3 elevators in the building, of large capacity, one being able to take care of freight.

The library floor will be laid out so as to accommodate not only the present consolidated libraries of 50,000 volumes, but a well rounded, comprehensive collection of 6 or 8 times that number. There will also be a number of reading and reference rooms on that floor. For the purposes of the Engineering Building and the Engineers' Club, regarded as separate structures, it is proposed to expend about $1,000,000, leaving the other $500,000 for tearing down of old buildings, excavation, architects' and engineers' fees, machinery, elevators, lighting fixtures and the equipment of the library and auditorium. As to the architecture of both buildings, it is the expressed wish of Mr. Carnegie that it should be simple and dignified, something that will be as good in style 100 years from to-day as now.

The Engineers' Club, with a frontage of 50 feet and a depth of 100, will front on Fortieth street and Bryant Park, looking across to the New York Public Library, now partially completed. It is proposed that the club building shall be 11½ stories, including also basement and sub-basement. The half story will be on the roof and will have the kitchen and some rooms for accommodation of the help, the other part constituting a roof garden with outlook on the little park and Hudson river. The eleventh floor below will be occupied entirely by the banquet hall and its service facilities, and will be one of the finest rooms in the house, looking across to the park and New York Library. Below this will come the breakfast room floor, with a large breakfast and lunch room and several private dining rooms. Next will cone four floors occupied by bedrooms for members. There will be 60 of these rooms in all, and the smallest is to be not less than 150 square feet. There will be generous bath facilities and all rooms will have outside air and light. Below these sleeping accommodations will come the billiard room floor, with a large billiard room across the front of the house, and with board rooms, committee rooms, card rooms, etc., in the rear. Next below will come the floor containing the club room or general reception and meeting room in front and the library in the rear, these being the only two rooms on that floor. The next or ground floor, raised several feet above the sidewalk, will contain the office, large coat rooms, general reception rooms, telephone booths and a large, handsome *café*.

Below the sidewalk will be a basement and sub-basement containing machinery, refrigerating plant, store rooms, wine cellar, steward's rooms and sundry other facilities. There will be three elevators running from cellar to roof, one with capacity for freight. There will also be a main grand ornamental stairway running up to the level of the billiard room floor and there will be service stairways throughout, which can also be used by the members. It is believed that good architectural plans will enable the buillings to present from the Bryant Park front a harmonious and handsome *ensemble* above the roofs of the private dwellings in the vicinity. A covered areaway across the light well between the two buildings will render intercommunication easy, and the committee will also entertain plans throwing a light, artistic bridge across at about the level of the library floor of the Engineering Building.

Central Station Economy.

By MR. F. H. DAVIES, in *Elec. Engr.*

When one considers that in the average well managed electricity works only about one-twentieth of the heat energy liberated by the combustion of coal is delivered in the shape of electrical energy at the dynamo terminals, it is obvious that there is plenty of room for improvement in methods of generation. But practical experience shows that if this tremendous loss is to be reduced to any appreciable extent, these methods must be of an entirely new character, and must not require the present numerous transformations of energy that necessarily produce uneconomical results. This fact has been recognized for some time, and many efforts have been made to bring about a more satisfactory state of affairs by the production of electricity direct from coal, thus eliminating those factors that are responsible for the waste—viz.,

boilers, steam pipes, engines and dynamos. Whether this Utopian idea will ever take practical shape remains to be seen; at the present time the outlook is hardly hopeful, and we have no alternative but to proceed along the stereotyped, and from the point of view of transformation of energy, extremely inefficient lines.

There are, however, many little economies that may be effected in central station practice, which, although small in themselves, mount up considerably in the long run. The means of securing these economies will generally suggest themselves when it is ascertained where the loss is taking place, but in connection with this the chief thing is to know where to look for it. A case in point is that of wet coal. Very frequently, when coal is brought to the works by barge, it arrives in a more or less sodden state at the bottom of the load, and as this portion is naturally on top when stored into the bunkers, a great part of the water percolates into the heap and damps it right through, with the result that its efficiency as a heat producer is greatly diminished. It is astonishing what a long time a heap of damp small coal takes to dry even when exposed to sunshine or a high temperature, in the boiler house. The surface naturally dries quickly, but a few inches down moisture will be found even after weeks of storing in a dry place. The obvious remedy is continually turning the coal and spreading it over as large a surface as possible, but this necessitates bunkers of very ample proportions, such as are not usually found. The prevailing impression seems to be that coal can be stored anywhere and anyhow, and many do not appear to be alive to the fact that "weather" has a very bad effect on its calorific properties. The ideal coal bunker should be spacious and well ventilated, and, if possible, placed in such a position as to allow of a glass roof, and the consequent drying action of the sun. Coal stored in such bunkers has a fair chance of drying, that in the usual gloomy dungeon of the domestic coal cellar variety it does not get. This seems but a small point, but it is one that should not be neglected, as those who have gone into the question practically well know. Of course, where coal is very small and dusty the addition of a little water is necessary, in order to keep it from being carried into the flues, unconsumed, by the draught.

Bad stoking is a very prolific source of waste, and whether it is performed by hand or machinery, there are few engineers who can be certain that they are getting the full value out of the coal consumed. It is well known, of course, that the grate should be uniformly covered, and only sufficient air admitted to insure perfect combustion and the minimum amount of smoke. It is, however, only too common to find bare patches on the bars, especially where mechanical stokers are used, or, rather, misused. With those of the coking type with movable grates, a common mistake in working is that of allowing the fuel to burn completely away before it reaches the back of the furnace, the consequence of which is that the hinder parts of the bars are only covered with clinker, and so let through air in large quantities, thereby reducing the efficiency considerably. It is by far better practice to so adjust the speed of the bars that the fuel falls over the back partially consumed; it can always be burnt over again mixed with fresh coal, or if allowed to remain in the ash pit, will efficiently finish its combustion there. Another alternative is to work with a thicker fire, which naturally takes longer to burn away, but this course is not always possible, as the thickness of fire must to a certain extent depend upon the nature of the coal and conditions of load and draught. Good stoking is naturally the outcome of experience that dictates what must be done under varying conditions, and it must not be thought that even the best mechanical stoker can be efficiently worked by an unskilled man; if anything, the reverse is the case.

The banking of fires in standing boilers is another operation that frequently gives rise to loss, and in connection with this it is most essential that the coal should be well damped and heaped, and that the dampers should be efficient—that is to say, not leaky.

The brickwork settings of water-tube boilers need most careful erection and watching, as the air leakage that is continually taking place through the pores of the bricks and their joints is very deleterious to efficiency. The layers of fireclay mortar between the courses should be as thin as possible, and the bricks should always be of the glazed variety. Cracks, which are bound to occur in time, should be thoroughly stopped up directly they appear, and holes in the brickwork through which blow-down and other pipes emerge should be carefully fillen up or covered, not with cement, as this is liable to cause damage to the pipes, but with a daub of boiler lagging or a wooden or iron cover. This trouble of air leakage is so serious and difficult to overcome that in places it has been found necessary to completely cover in the boiler and brickwork with a thin sheet iron casing. Well built glazed brickwork will, however, generally solve the problem, or where ordinary bricks are used, a good coating of tar wil considerably reduce the leakage.

Perhaps the greatest source of waste in boiler house plant is the old-fashioned steam feed pump that carries steam along the full length of the stroke. This fact has long been recognized, but, strange to say, this style of pump is still installed on the score of its supposed cheapness, which is an utter fallacy. The modern expansive steam pump is very little, if any, dearer in first cost, and will certainly save the extra amount if it exists, in a few months in steam consumption alone, putting aside repairs and renewals, which are comparatively low in this type of pump. The so-called cheap pump is also frequently very wasteful on the water side, owing to its plunger letting by, thus producing a churning motion that absorbs a great deal of power. The water pistons of these pumps should be frequently examined, and if it is noticed that a higher speed than usual is necessary to perform the same work, they should be repacked at once, as this is a sure sign of letting by. Apropos of this, it is always advisable to thoroughly overhaul pumps of this kind before setting to work for the first time. In a station with which the writer was connected some cheap American feed pumps were installed. They were sent down as ready for running and were started up hurriedly without examination. One of them answered satisfactorily for a year, and then gave signs of being unable to do its work. Upon overhauling it was found that the water piston had never been packed; the space for the fibrous packing was empty, and the pump had been running, strange to say, satisfactorily on the two gun metal ends of the plunger. This was doubtless due to a very exceptional piece of American workmanship, as at the start the piston itself had evidently been a perfect fit. The above is given as an instance of the care that must be exercised in the installation of plant of this class, and that in the interests of efficiency it does not do to take anything upon trust when dealing with it.

(To be Continued.)

ITEMS OF INTEREST FROM VARIOUS LOCALITIES.

THE measure to reduce the gas rate in Washington, D. C., which was considered by the U. S. Senate Committee on the District of Columbia, was adversely reported; as also was the motion to investigate the Washington Gas Light Company's increase in its indebtedness. The report of the Committee is well worth reading, as the electrical current suppliers in Washington well know. Those who care to secure the text of the report of the Committee may obtain the same by asking or writing for the report on Senate bill, 3,042.

THE Gas Machinery Company, of Cleveland, O., has been authorized to instal the necessary purifying equipment required on the gas plant of the Westerly (R. I.) Railway and Lighting Company. The name of the buying or purchasing Company seems misapplied; the cart before the horse, as it were.

WE suppose that everyone who should be interested in the matter has been advised of the changes made by Messrs. Lindsay & Co., of Chicago, in their factories and salesroom. The former are in 195 to 197 Michigan street, and the latter is in 70 La Salle street.

MR. GEORGE B. LELAND, formerly in charge of the Norwich (Conn.) Gas and Electric Company, is now in active management of the plants of the Stamford (Conn.) Gas and Electric Company.

A CORRESPONDENT in St. Joseph, Mo., writing under date of the 29th ult., says: "Mr. Joseph E. Riley, for quite some time connected with the Denver (Col.) Gas and Electric Company is now in this city, where his fortunes are linked with those of the St. Joseph Gas Company as its business manager. He closed his time with the Denver Company on the night of April 23d, and his going out was marked by a proceeding which showed that those from whom he was going were sorry he was leaving them. Surrounded by several of his former associates he was escorted to the Denver Company's hall, where he was obliged to assume the ownership of a handsome loving cup in solid silver. The cup is a beautiful specimen of the silversmith's craft. It is a trifle over a foot in height, and I'd be ashamed to mention its capacity. The inscription notes this: 'Presented to Joseph E. Riley, by the representatives and officers of the Denver Gas and Electric Company as a token of their esteem and respect. Denver, Col., April 23d, 1904.' Presentation speeches were made by Mr. G. H. Huston and Mr. Frank W. Frueauff. Mr. Riley's reply was made through Mr. C. E. Stannard, but later on

the recipient showed to what depths loving cups might be drained. He was liked in Denver; we are sure to like him here.—A. V. W."

THE works of the Chicago Heights (Ills.) Gas Company have been completed, and the people are seemingly well satisfied with that which has been done for their "lightenment."

THE Peoples Power Company, of Moline, Ills., will have a complete gas plant when the Stacey Manufacturiag Company will have completed its labors therein this fall.

THE Library Committee of the Pacific Coast Gas Association is looking for one or two numbers of the JOURNAL which we are not able to supply. Communicate with Mr. J. B. Grimwood, Secretary of the Association, Rialto Building, San Francisco, Cal.

"MR. HENRY RICE, one of the organizers of the North Attleboro (Mass.) Gas Company, died at his home in North Attleboro the morning of the 2d inst., in his 84th year. He was born in North Walpole, N. H., and graduated from Brown University when in his 22d year. His first try in life was at teaching, which was done by him more or less successfully in Providence, R. I., East Douglas and Mendon, and later on in North Attleboro. Mercantile trading subsequently engaged his attention, and his initial venture therein was with the North Attleboro Gas Company, as noted before, his connection with the concern, from its inception until his resignation, covering a period of 20 years.—L."

IN our advertising columns Mr. George G. Ramsdell announces that he is the agent, for the United States and Canada, of the "New Inverted Incandescent Gas Lamp Company, Ltd., of England," with headquarters at 530 Broadway. These lamps have found much favor in England, where thousands of them have been placed. The lamps have been rated and adjusted to the gases usually found in American cities, and the makers insist that the lamp is shadowless, is quite up to any useful decorative effect, and may be counted on to yield an illumination of 25 candles per cubic foot, from the gas distributed in New York city.

MR. GODFREY L. CABOT, writing from Boston, Mass., under recent date, inquires: "Perhaps some of your readers can kindly tell us whether paraffine paper has ever been tried as a protection of pipes from electrolysis. It seems to me that, by neatly fitting paraffine paper around the pipe, and wrapping outside this a bandage of cloth, soaked in coal tar pitch or asphalt, a protection could be obtained against electrolysis under the conditions usual in our streets. Care would have to be taken that the inner layer was impervious, as asphalt itself is not a sufficiently good insulator to give the required protection. I hope that some one of your many readers will be able to answer this question. Six years ago I investigated the subject of electrolysis in many European countries and found that in many places the street railway companies were compelled by law to bond their rails in an efficient manner, and that this greatly diminished the difficulty; but we are not all protected in this way."

THE Missouri Athletic Club, of St. Louis, recently was the pit scene of a dinner given to the Indiana State Commission on World's Fair, by Mr. O. N. Guldlin, Charles McCullough, A. B. Slater, Jr., and other gentlemen connected with the Western Gas Construction Company, of Fort Wayne, Ind. The dinner was good; so was the company. Mr. Fred R. Persons was toastmaster.

THE "capitalists" who have been drilling for natural gas in the vicinity of Penn Yan, N. Y., are inclined to give up the venture. Causes, little gas and less money.

THE Philadelphia *Ledger*, of the 3d inst., has this to say respecting the annual meeting of the United Gas Improvement Company. "It was thought that a spirited contention would be had over representation in the Directorate at the U. G. I. Company's meeting yesterday. * * * President Thomas Dolan called the meeting to order, and William E. Wood was made Chairman, and Lewis Lillie, Secretary. Of the 734,304 shares of the Company's stock outstanding, proxies for 507,000 had been obtained by the management and were voted as one for the President and Directors. President Dolan's report dealt as follows with the Company's finances: 'The only change to be noted is the increase of the issued capital stock to $36,674,955; the exchange of our preferred and common stock in the Atlanta (Ga.) Gas Light Company for the same amount at par of the preferred and common stock of the Georgia Railway and Electric Company, which owns the street railroads and electric light plant in Atlanta; the sale of our stock in the electric light company at Kennett Square, Pa., which came to us in a trade and was too small to justify the supervision of our organization; the purchase of the stock of the Savannah (Ga.) Gas Light Company, formerly leased to our Mutual Gas Light Company, and the consolidation of the two companies under the name of Savannah Gas Company, the leasing to the Public Service Corporation of New Jersey of the Gas Companies in which we are interested in the State of New Jersey and the sale to the same corporation of our stock in the United Electric Company, of New Jersey. The Public Service Corporation is organized under the laws of New Jersey, with an authorized capital of $25,000,000, of which $10,000,000 has been sold for cash at par. The remaining $15,000,000 can only be issued for cash at not less than par. During 1903 the gas companies in which we are interested increased their sales 16.6 per cent. in volume over the sales of 1902. The business of the electric light and trolley companies in which we are interested increased 11.3 per cent. and 5.3 per cent. respectively. The net profits for the year amounted to $4,027,529.05, which is 12.4 per cent. upon the capital actually invested as the new capital was not paid in until July 1, 1903. Out of these net profits, $2,569,349 was paid in dividends, and the balance ($1,458,180.05) invested in the business. The General Manager will exhibit to any shareholder desiring to see them statements of operating results for the year, or give any information required about your property.' Although it had been said that successors to Directors William W. Gibbs, Clement A. Griscom and George Philler would be chosen, friends of these men were present with more than enough votes to elect in any event. It was said last night that Mr. Shipley will soon resign from the Board and be succeeded by Senator Dryden, of New Jersey. This could not be confirmed, however." There was no change in the Board, save the naming of Mr. Samuel R. Shipley to succeed the late Mr. W. L. Elkins. Mr. Dolan, of course, was re-elected President.

THE gas rate at Swedesboro, N. J., has been reduced to $1.50 per 1,000 cubic feet.

AT the annual meeting of the shareholders and directors in the Petersburg (Va.) Gas Company the following officers were elected: President, R. D. Apperson; Vice-President, J. D. Horsely; Secretary and Treasurer, F. H. Shelton; Directors, the named officers and Messrs. Joseph H. Reading and Frank Battes. Mr. Edward A. Pond was re-elected Manager and Mr. W. H. Cole was re-elected Superintendent. The annual reports go to show that the Company is in the peaceful possession of a good and growing business.

THE Lee County Lighting Company, of Dixon, Ills., proposes to extend its mains to the outlying district of Amboy.

THE proprietors of Lindsay & Company, of Chicago, inform us that they have completed arrangements whereby they have purchased and secured control of the output of the Robin Manufacturing Company, of Chicago. Continuing, our informants add: "The Robin Manufacturing Company have been known for a long time to the trade as manfacturers of incandescent mantles. They have succeeded in building up a very satisfactory business in mantles and other goods, and in securing this business we have in mind a number of improvements which will warrant a further increase under the new combination. The firm name of Lindsay & Co., of course, will be retained."

THE Board of Public Service, Hamilton, O., is trying to borrow money for the rehabilitation of the municipal gas plant. It needs "a few" repairs, beyond a doubt.

THE selling rate at Derby, Conn., has been put at $1.20 per 1,000 cubic feet, net.

WE are told that the Municipal Gas Company, of Albany, N. Y., has decided to handle its own appliance business hereafter. The Company has appointed Mr. Edward C. Dillon, formerly Manager of the Gas Appliance Company, of America, to take charge of this branch of its business.

MR. JOHN M. BROCK, formerly Manager for the Gas Appliance Company, of America, who is now associated with the William M. Crane Company, of New York, has secured the contract from the Troy (N. Y.) Gas Company for the maintaining of its gas appliance business.

THE Cincinnati Gas and Electric Company will open a handsome appliance display wareroom in the building at the corner of Fourth and Race streets, Cincinnati.

THE AMERICAN GAS LIGHT JOURNAL

A. M. CALLENDER & CO.,
PROPRIETORS.

THOS. J. CUNNINGHAM,
ELBERT P. CALLENDER,
EDITORS.

CHAS. E. SANDERSON,
MANAGER.

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OHIO GAS LIGHT ASSOCIATION.

NOTIFICATION RESPECTING ADVERTISING.

Orders for new advertising, or for changes in standing advertisements, to insure attention in the issue following their reception, must be in hand any time of Wednesday.

AGENTS:

New York—American News Co., 39 and 41 Chambers St.
Germany—Lemcke & Buechner, of New York.
England—Aug. Siegle, 30 Lime Street, London.

MONDAY, MAY 9, 1904.

The Market for Gas Securities.

There was not animation in the trading in local gas securities during the week, although prices were fairly well maintained, especially in respect of Brooklyn Union, which closed today (Friday) at 219 bid. The hearing before the Governor on the Remsen gas bill was had according to agreement last Tuesday, and a queer medley of odds and ends, leavened a bit by the presence of some whose views command respect on ordinary occasions, were on hand to oppose it. Up to the closing time to-day the Governor had not put himself upon record regarding the measure. The shares are 208¾ to 209.

Peoples, of Chicago, is steady, and so is Consolidated, of Baltimore. Washington (D. C.) is again crowding the 300 mark. Cincinnati is at par, and Indianapolis issues are inquired for at advancing prices. The gas bond market is fairly active. The U.G.I. Company's meeting was harmonious, and the financial condition thereof gains all the time.

Gas Stocks.

Quotations by George W. Close, Broker and Dealer in Gas Stocks.

16 WALL STREET, NEW YORK CITY.

MAY 9.

☞ All communications will receive particular attention.

☞ The following quotations are based on the par value of $100 per share.

N. Y. City Companies.	*Capital.*	*Par.*	*Bid.*	*Asked.*
Consolidated	$73,177,000	100	208⅞	209
Central Union, Bonds, 5's	3,000,000	1,000	104	106
Equitable Bonds, 6's	1,000,000	1,000	105	..
" 1st Con. 5's	2,300,000	1,000	118	120
Metropolitan	658,000	..	108	112
Mutual	3,500,000	100	270	300
Municipal Bonds	750,000	..	..	..
New Amsterdam Gas Co.—				
Bonds, 5's	11,000,000	1,000	105¼	106
New York & Richmond Gas Co. (Staten Island)	1,500,000	100	34	..
1st Mtg. Gold Bds. 5 p. ct.	1,000,000	..	..	..
Northern Union, Bonds, 5's	1,250,000	1,000	102⅜	105⅛
New York and East River—				
Bonds 1st 5's	3,500,000	1,000	109¼	111
" 1st Con. 5's	1,500,000	..	106	108
Standard	5,000,000	100	125	13
Preferred	5,000,000	100	145	155
Bonds, 1st Mortgage, 5's	1,500,000	1,000	116	117
Yonkers	299,650	500	130	..
Out-of-Town Companies.				
Brooklyn Union	15,000,000	100	219	225
" " Bonds (5's)	15 000,000	1,000	113	115
Bay State	50,000,000	50	¼	⅝
" Income Bonds	2,000,000	1,000	..	75
Binghamton Gas Works	450,000	100	28	30
" 1st Mtg. 5's	500,000	1,000	93	96
Boston United Gas Co.—				
1st Series S. F. Trust	7,000,000	1,000	82	85
2d " " "	3,000,000	1,000	47⅛	50
Buffalo City Gas Co.	5,500,000	100	4	4⅝
" " Bonds, 5's	5,250,000	1,000	61	68
Capital, Sacramento	500,000	50	..	35
Bonds (6's)	150,000	1,000	..	..
Chicago Gas Co. Guaranteed Gold Bonds	7,650,000	1,000	104	104¼
Cincinnati Gas and Electric Co	29,500,000	100	100⅛	101
Columbus (O.) Gas Co., 1st Mortgage Bonds	1,500,000	1,000	101	101⅛
Columbus (O.) Gas Lt. & Heating Co	1,682,780	100	88¼	89¼
Preferred	3,026,500	100	107⅛	109
Consumers, Toronto	1,700,000	50	218	225
Consolidated, Baltimore	11,000,000	100	70¾	72
Mortgage, 6's	3,500,000	..	..	118
Chesapeake, 1st 6's	1,000,000	..	..	..
Equitable, 1st 6's	910,000	..	..	..
Consolidated, 1st 5's	1,490 000	..	..	112
Consolidated Gas Co. of N.J.	1,000,000	100	15	17
" Con. Mtg. 5's	880,000	1,000	86	90
Consolidated G. & E. Co.'s. Little Falls, N.Y.	90,000	100	..	100
Bonds	75,000	..	..	100
Detroit City Gas Co.	4,825,500	50	..	50
" Prior Lien 5's	5,603,000	1,000	99⅛	100
Detroit Gas Co., 5's	351,000	1,000	75	75¼
" Inc. 5's	16,000	100	98½	100
Equitable Gas & Fuel Co., Chicago, Bonds	2,000,000	1,000	..	101
Essex and Hudson Gas Co.	6,500,000	..	39	40
Fort Wayne	2,000,000	..	..	..
" Bonds	2,000,000	..	55	..
Grand Rapids Gas Lt. Co. 1st Mtg. 5's	1,225,000	1,000	104½	105
Hartford	750,000	25	245	265
Hudson County Gas Co., of New Jersey	10,500,000	..	59½	61
" Bonds, 5's	10,500,000	..	103	104½
Indianapolis	2,000,000	..	62	72
" Bonds, 6's	2,650,000	..	103½	106½
Jackson Gas Co.	250,000	50	73	75
" 1st Mtg. 5's	200,000	1,000	101	102½
Kansas City Gas Light Co., of Missouri	5,000,000	100	..	36
Bonds, 1st 5's	3,222,000	1,000	102	104
Laclede, St. Louis	10,000,000	100	90	100
Preferred	2,500,000	100	75	90
Bonds	10,000,000	1,000	109⅛	110
Lafayette Gas Co., Ind.	1,000,000	100	..	60
Bonds	1,000,000	1,000	60	65
Louisville	2,570,000	50	136	140
Madison Gas & Elec. Co. " 1st Mtg. 6's	350,000	1,000	107½	108½
" 6 per cent. scrip, due 1910	100,000	25	85	87
Montreal, Canada	2,000,000	100	218	184¾
Nashville Gas Lt. Co.	1,000,000	100	110	..
Newark, N. J., Con. Gas Co.	6,000,000	..	56	58
Bonds, 6's	4,600,000	..	105	105⅜
New Haven	1,000,000	25	64	70
Peoples G. L. & Coke Co., of Chicago	25,000,000	100	97	97½
Peoples Gas Lt. & Coke Co., Chicago, 1st Mortgage	20,100,000	1,000	..	..
2d "	2,500,000	1,000	104	.
Rochester Gas & Elec. Co.	2,150,000	50	88	..
Preferred	2,150,000	50	118	..
Consolidated 5's	2,000,000	..	87½	90
San Francisco, Cal.	15,800,000	100	58¼	58¾
St. Joseph Gas Co. " 1st Mtg. 5's	751,000	1,000	92	96½
St. Paul Gas Light Co.	1,500,000	100	45	47
1st Mortgage 6's	650,000	1,000	118	116
Extension, 6's	600,000	1,000	113½	115
General Mortgage, 5's	2,465,000	1,000	92	93
Syracuse, N. Y.	1,975,000	100	46	48
Bonds	2,047,000	1,000	94	96
Washington, D. C	2,600,000	20	291⅞	295
First mortgage 6's	600,000	..	..	..
Western, Milwaukee	4,000,000	.	..	..
Wilmington, Del.	600,000	50	230	..

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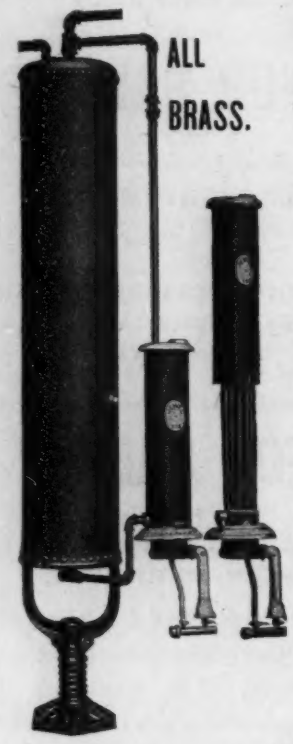

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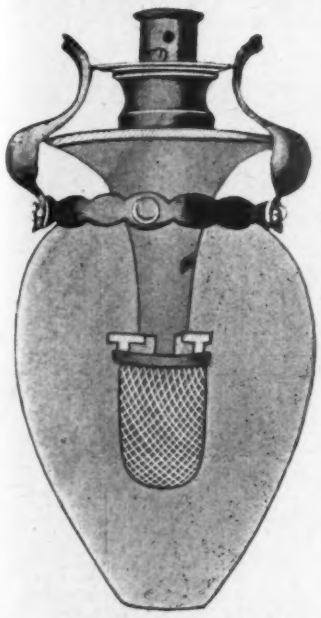

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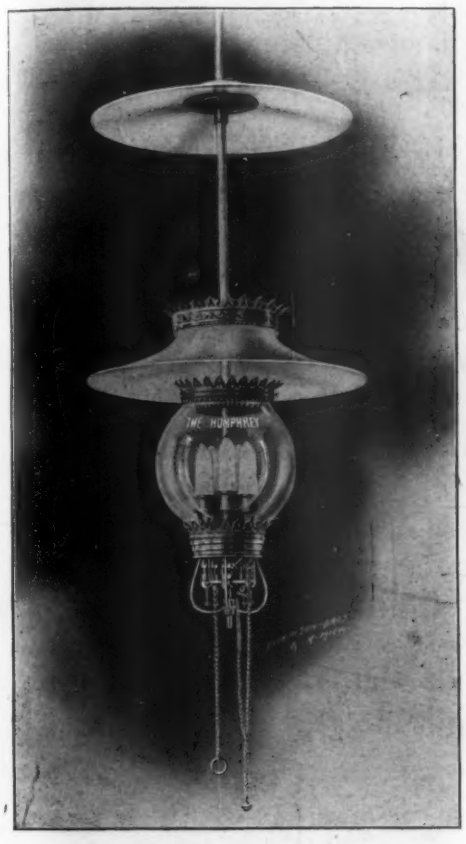

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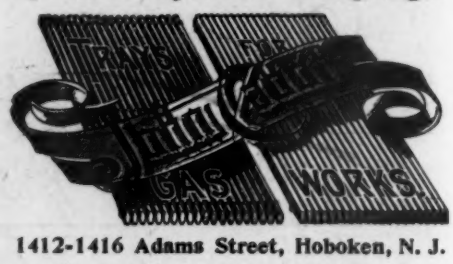

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Because they are the best.
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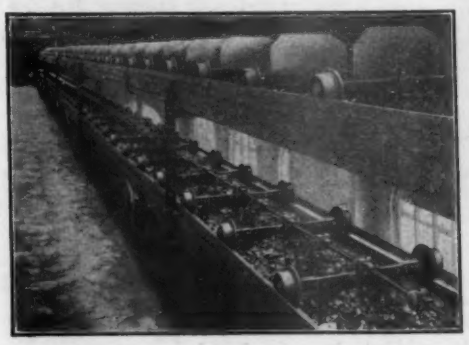

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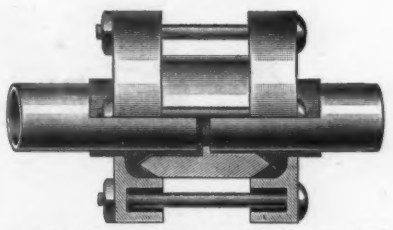
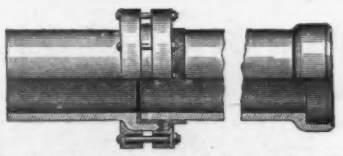
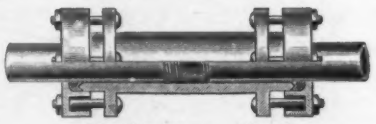


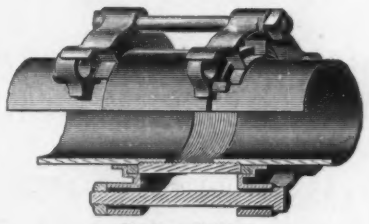
Insulating Coupling for Wrought Iron Pipe. Style 5.



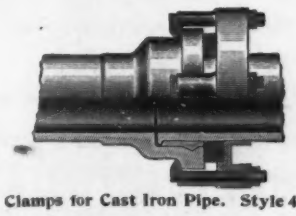
Insulating Coupling for Dresser Bell and Spigot Cast Iron Pipe. Style 6.



Regular Sleeve. Style 2.



Clamp. Style 4.



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Pipe Couplings, Sleeves, Clamps, Crosses, Tees and Ells.

My Insulating Coupling prevents the destruction of pipe by electrolytic action, in either water or gas lines.

SEND FOR CATALOGUE.

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Economize Heat in Water Gas Plants,

BY UTILIZING A

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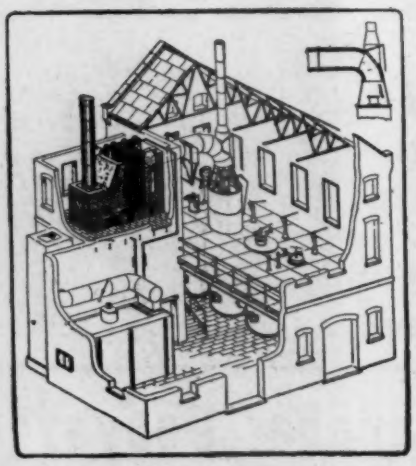

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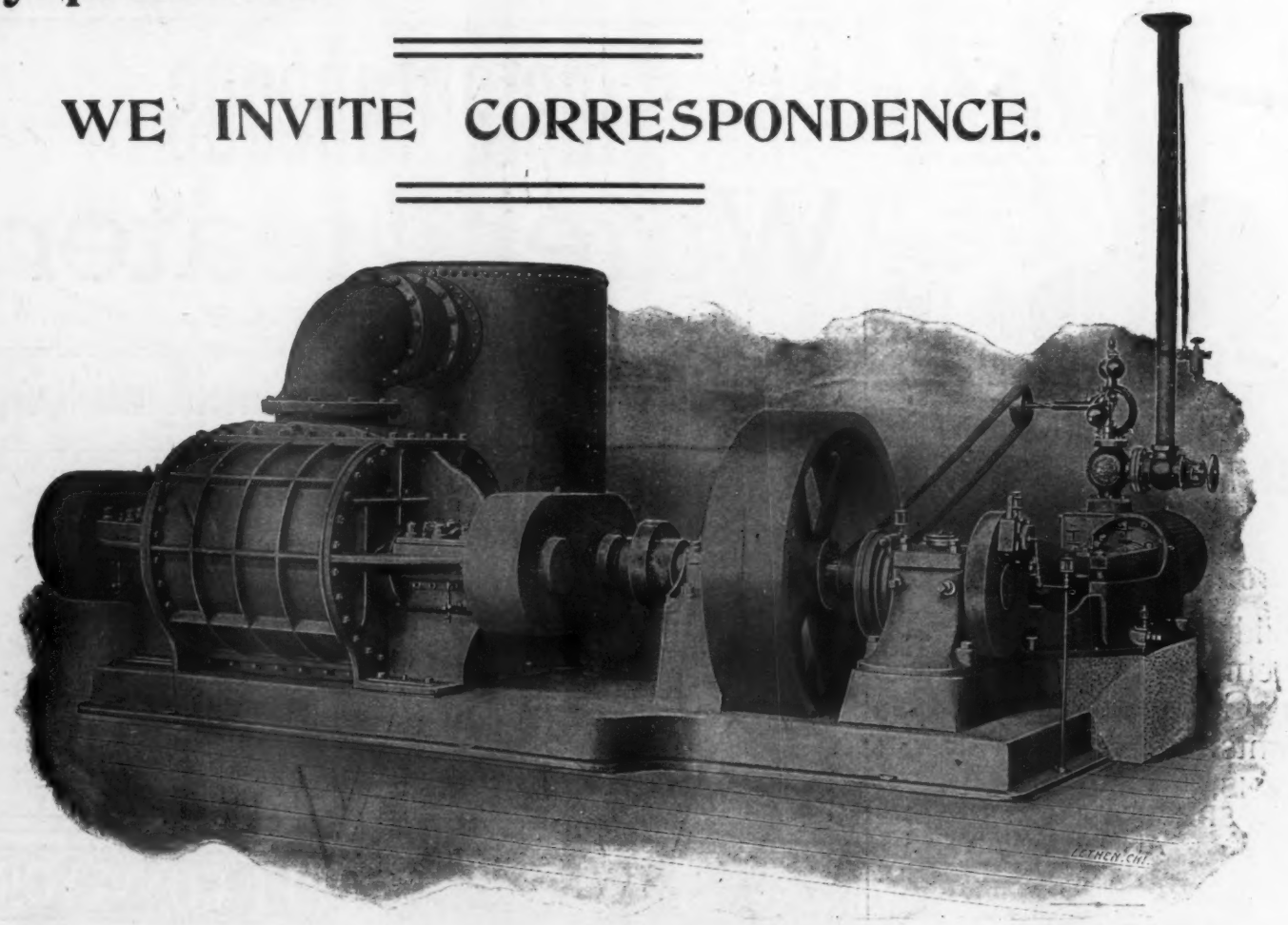

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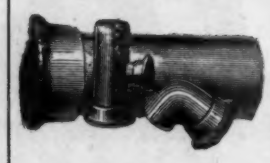

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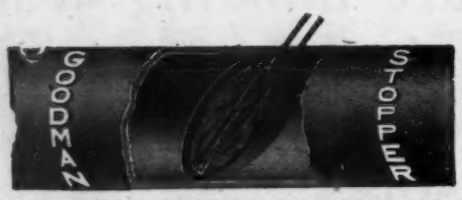

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Water Heaters

FOR GAS.

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Humphrey Crescent Instantaneous

WATER HEATERS.

Simple construction.
Perfect workmanship.
Highest efficiency.
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For general use and long continued satisfaction, we recommend this No. 2 Heater, the handsomest ever made.

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EQUIPPED WITH

BALL BEARING ROLLS

ARE THE BEST,

because they possess greater efficiency, consume less power, and the belts last longer than when any other type of roll is employed.

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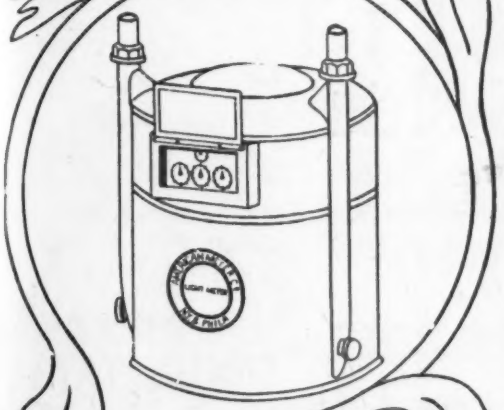
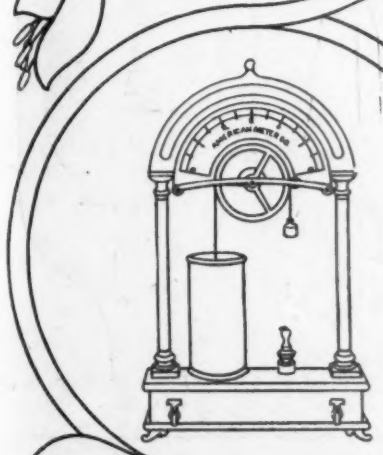
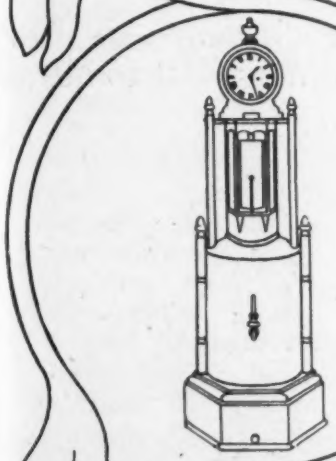
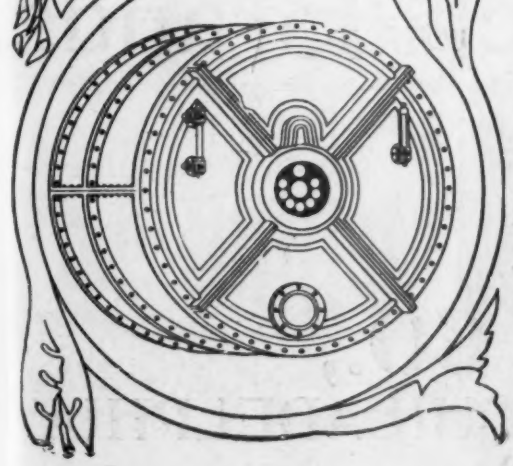




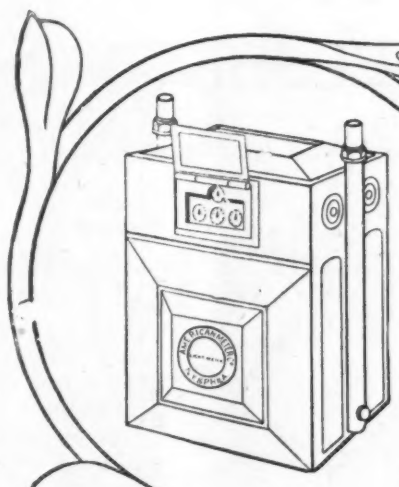


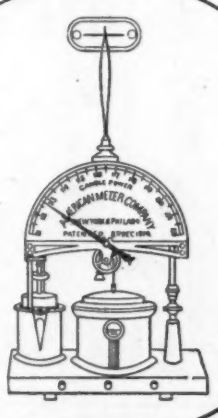


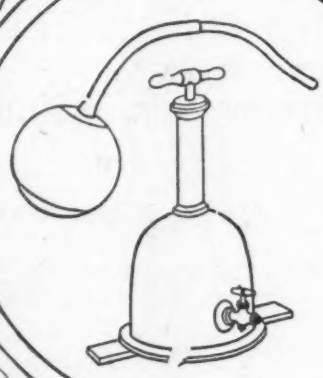
PUBLIC LIGHTING TABLE.

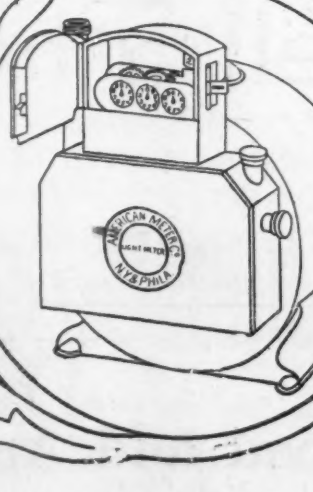
MAY, 1904.

Day of Week.	Date.	Table No. 1. Following the Moon. Light.	Table No. 1. Following the Moon. Extinguish.	Table No. 2. New York City. All Night Lighting. Light.	Table No. 2. New York City. All Night Lighting. Extinguish.
				P.M.	A.M.
Sun.	1	7.30 PM	9.50 PM	6.45	4.00
Mon.	2	7.30	10.50	6.45	4.00
Tue.	3	7.30	11.40	6.45	4.00
Wed.	4	7.30	12.30 AM	6.45	4.00
Thu.	5	7.30	1.10	6.45	4.00
Fri.	6	7.30	1.50	6.45	4.00
Sat.	7	7.30 LQ	2.20	6.55	3.40
Sun.	8	7.30	2.50	6.55	3.40
Mon.	9	7.30	3.20	6.55	3.40
Tue.	10	7.30	3.50	6.55	3.40
Wed.	11	7.30	3.50	6.55	3.40
Thu.	12	7.30	3.50	6.55	3.40
Fri.	13	7.30	3.50	6.55	3.40
Sat.	14	7.30 NM	3.50	7.00	3.30
Sun.	15	7.40	3.40	7.00	3.30
Mon.	16	7.40	3.40	7.00	3.30
Tue.	17	7.40	3.40	7.00	3.30
Wed.	18	7.40	3.40	7.00	3.30
Thu.	19	10.10	3.40	7.00	3.30
Fri.	20	10.50	3.40	7.00	3.30
Sat.	21	11.30 FQ	3.40	7.10	3.15
Sun	22	12.10 AM	3.40	7.10	3.15
Mon.	23	12.50	3.40	7.10	3.15
Tue.	24	1.20	3.40	7.10	3.15
Wed.	25	2.00	3.40	7.10	3.15
Thu.	26	2.40	3.40	7.10	3.15
Fri.	27	No L.	No L.	7.10	3.15
Sat.	28	No L. FM	No L.	7.15	3.15
Sun.	29	No L.	No L.	7.15	3.15
Mon.	30	7.50 PM	9.30 PM	7.15	3.15
Tue.	31	7.50	10 20	7.15	3.15









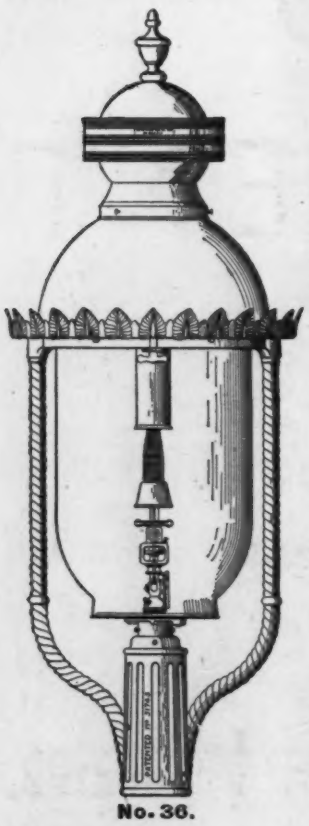
TOTAL HOURS LIGHTING DURING 1904.

By Table No. 1.	Hrs.Min.	By Table No. 2.	Hrs.Min.
January	225.00	January	423.20
February	205.40	February	367.40
March	187.40	March	355.35
April	169.50	April	298.50
May	152.30	May	264.50
June	137.20	June	234.25
July	138.50	July	243.45
August	151.00	August	280.25
September	164.40	September	321.15
October	191.30	October	374.30
November	210.30	November	401.40
December	237.10	December	433.45
Total, yr.	2171.40	Total, yr.	4000.00

NEW YORK, 97 Liberty Street. BOSTON, 814 Beacon Building. PHILADELPHIA, Broad and Arch Streets. ST. LOUIS, 712 Roe Building. CHICAGO, Foot of Orleans Street. SAN FRANCISCO, 712 Polk Street.

WELSBACH STREET LIGHTING COMPANY

.... OF AMERICA ....



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Welsbach System of Street Lighting,

Which includes its specially DESIGNED AND PATENTED BURNER for STREET and PARK LIGHTING exclusively.

Uniformly SUCCESSFUL in 150 Cities and Towns.

By means of the Welsbach System of street lighting the superiority of GAS over electricity for street lighting has been fully demonstrated.

POINTS OF MERIT:

It is { Economical, Attractive, Successful, Up-to-date.

IT LIGHTS THE STREET.

Where there are no gas mains we can furnish an equally good light by our SELF-GENERATING NAPHTHA WELSBACH BURNER, and thereby supply a uniform light in all localities.

Correspondence Solicited from Gas Companies and Others interested in Municipal and Outside Lighting.

No. 38.

AN underlying principle in business is to show an increase each year---to grow. The astute dealer not only seeks to retain this year's customers, but to attract new trade next year.

The formula is simple-

THIS SHIELD IS THE WELSBACH TRADE MARK.

IT IS A GUARANTEE AND A PROTECTION.

Sell The Welsbach Brands.

The imitation stuff is bad for the customer---which is bad for you.

The genuine Welsbachs---Burners or Mantles---make satisfied customers---keep customers---MAKE NEW ONES.

And your profit isn't merely dollars and cents.

WELSBACH CO.,

Broad and Arch Sts., PHILADELPHIA.

THE UNITED GAS IMPROVEMENT COMPANY

For the Year Ending December 31, 1903. has been Awarded Contracts in the Following Places for

Standard Double-Superheater Lowe Water Gas Apparatus.

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Baltimore, Md.	Lynn, Mass.	New York (Central Union Co.)
Chicago, Ills. ●	Newark, N. J.	Cicero, Ills.
Amesbury, Mass.	Washington, D. C.	Chicago (Ogden Co.)
Aberdeen, S. D.	Boone, Ia.	Easton, Pa.
Winsted, Conn.	Pueblo, Col.	Lawrence, Mass.
Canon City, Col.	Charlotte, N. C.	Council Bluffs, Ia.
Schenectady, N. Y.	Fall River, Mass.	Chattanooga, Tenn.
Hagerstown, Md.	Duluth, Minn.	Tuckerton, N. J.
Malden, Mass.	New York (Mutual Co.)	Springfield, O.
Bridgeport, Conn.	Waltham, Mass.	Easton, Pa. (2d contract).
Albert Lea, Minn.	Dover, Del.	Mobile, Ala.
Brooklyn, N. Y.	York, Pa.	Conshohocken, Pa.
Kansas City, Kas.	Minneapolis, Minn.	Mason City, Ia.
Hempstead, N. Y.	Allentown, Pa.	

TOTAL SETS FOR 1903, ... 62
TOTAL DAILY CAPACITY, ... 62,950,000 cubic feet.
TOTAL SETS TO DATE, ... 508
TOTAL DAILY CAPACITY, ... 362,780,000 cubic feet.

The United Gas Improvement Company,

Broad and Arch Streets, Philadelphia.

Established 1858. Incorporated 1890.
CHAS. E. GREGORY, Prest. DAVID R. DALY, V.-Prest. & Treas.
H. D. ABERNETHY, Sec.

J. H. Gautier & Co.

Greene & Essex Streets,
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FIRE BRICK and FIRE CLAY SPECIALTIES.

Ground Fire Clay, Fire Sand and Ground Fire Brick in Barrels and Bulk.

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FLEMMING GENERATOR GAS FURNACE

Brooklyn Fire Brick Works,

OFFICE AND WORKS:
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MANUFACTURERS OF

CLAY GAS RETORTS & SETTINGS, GENERATOR LININGS. SPECIALTIES.

Established 1854. Incorporated 1869.

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Fire Brick Manufg. Co.,

Manufacturers of { GAS RETORTS . .
FIRE BRICK . . .
RETORT SETTINGS

Water Gas Cupola Linings, Fire Clay, Etc.

Proprietors for the U. S., Coze System of Inclined Benches.

Estimates Furnished on Application for Most Successful Style of Construction.

Also for Free-Firing and Full and Half-Depth Regenerative Benches, for Burning either Coal or Coke in the Furnaces.

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Established 1845. Reorganized 1902.

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Manufacturers of the very best quality of Clay Retorts, Blocks, Tiles, Settings and Firebrick of every description.

Also Miners and Shippers of Fireclay, Fire Sand, Ground Brick in Barrels.

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SEND FOR DESCRIPTIONS OF

Adam Weber Sons

NEWEST DESIGN FOR

Improved Furnace Firing

(Two Benches with One Furnace)

AND

Independent Retort Settings.

PATENTS APPLIED FOR.

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MODERN BENCH IRONWORK.

ISAAC C. BAXTER, President. ESTABLISHED 1864. PETER YOUNG, Sec'y and Treas.

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JAMES GARDNER, JR., CO.,

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Successor to WILLIAM GARDNER & SON.

Fire Clay Goods for Gas Works.

HENRY MAURER & SON,

(ESTABLISHED 1856.)

EXCELSIOR FIRE BRICK & CLAY

RETORT WORKS

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OFFICE, 418 to 422 East 23d St., N. Y.

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BENCH SETTINGS,

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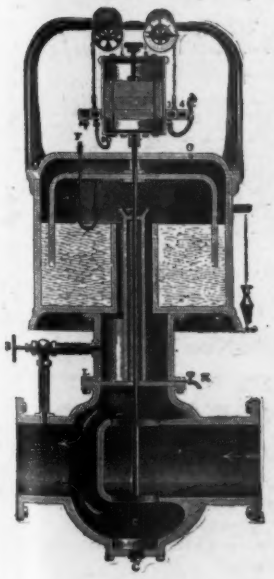

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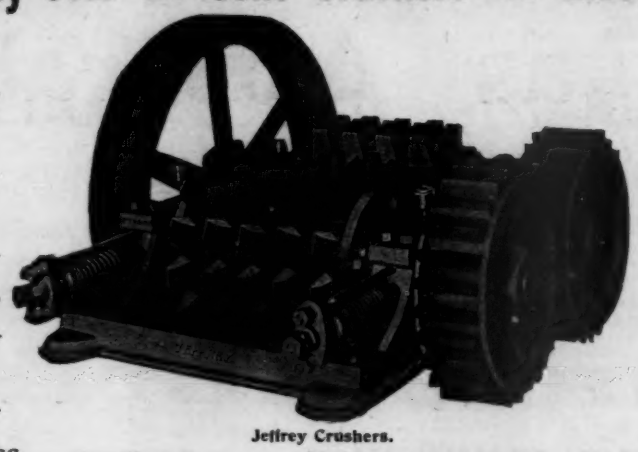

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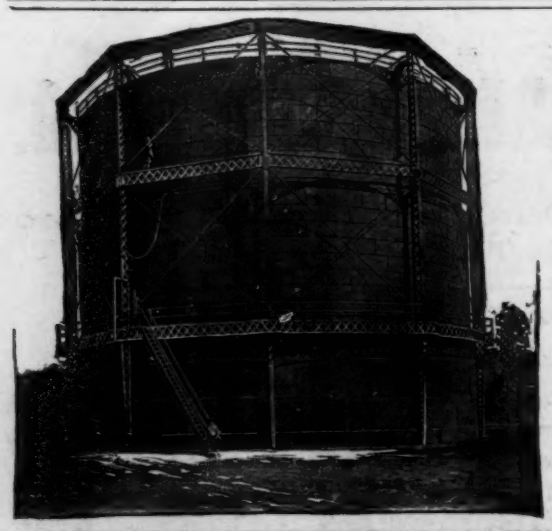

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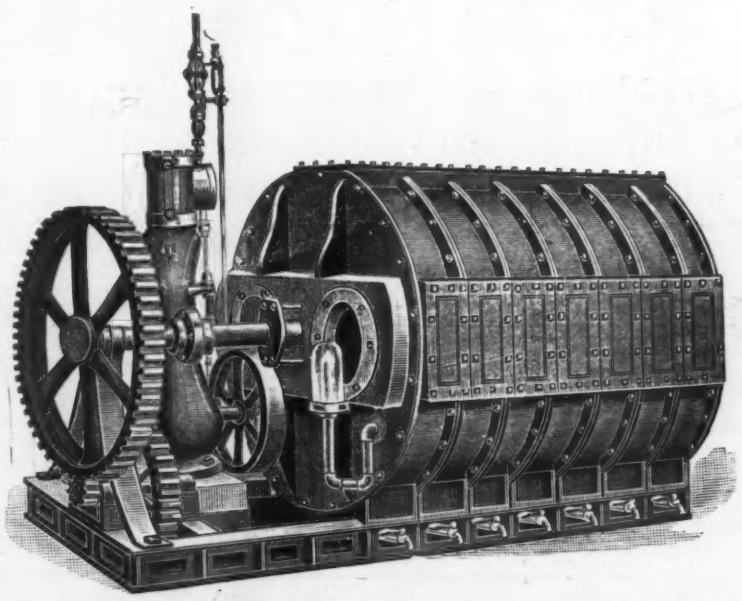

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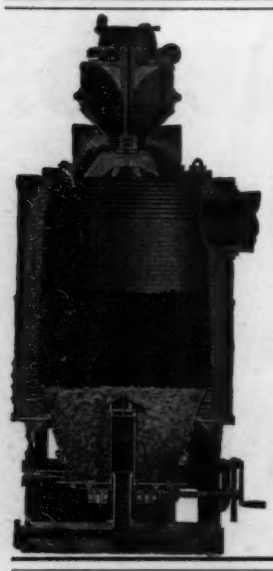

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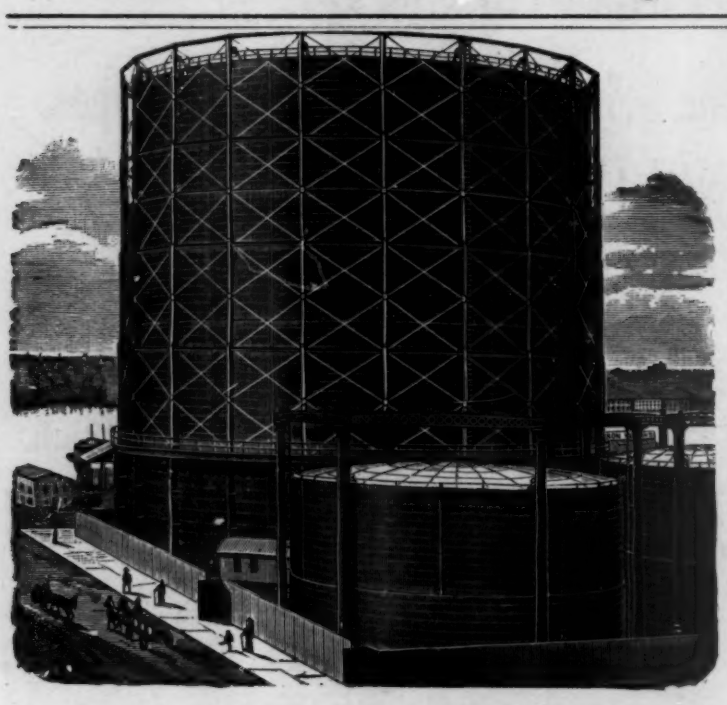

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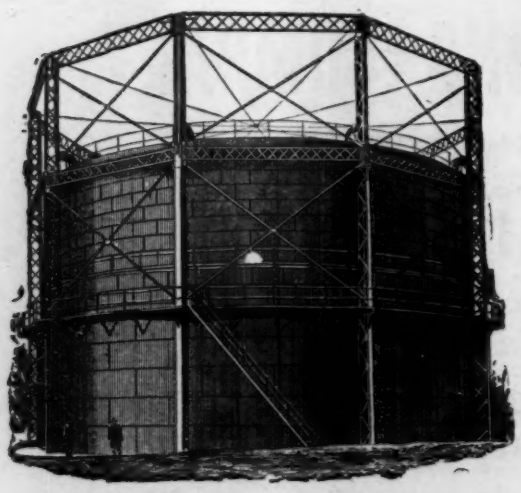

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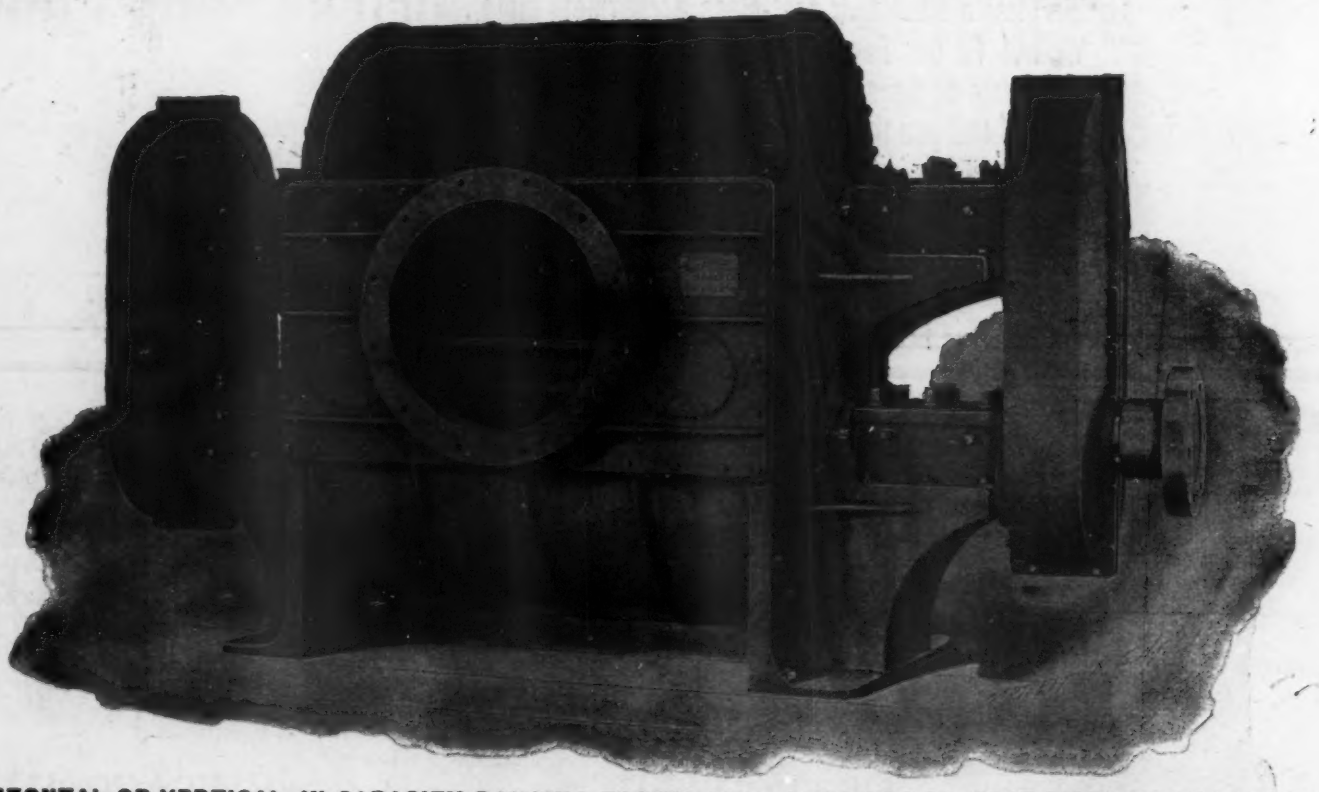

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